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A. M. A. SESSION ATLANTIC CITY JUNE 8-12, 1942

Johnstone's Occupational Diseases

New Book—Just Ready!—Here is a *new* book of utmost importance to the family physician, industrial physician, surgeon, public health physician, safety engineer, and every one who has to do in any way with the health of those employed in industries. Not only does Dr. Johnstone tell how to diagnose, prevent and treat occupational diseases, but he also gives specific information on liability, compensation and medicolegal aspects—information of such great importance today because of the national speed-up of industry.

For example, you are given tables of compensation for *each state*—the period of compensation; the amount; total and partial, permanent and temporary disability. You are told exactly how to examine the patient, take his history, how to make out proper medical reports, how to give testimony, how to estimate disability, how to deal with cases of malingering, etc., etc.

And then, Dr. Johnstone takes up in unusual detail the *causes* of occupational diseases, such as gases, solvents, fumes, metals, dusts, etc. His discussions of the diagnosis of lead and of benzol poisoning are outstanding, as are also those of diseases arising from cadmium, manganese, selenium and other metals. The chapter on "industrial back" is of great significance; the discussions of hernia, trauma, etc., are particularly valuable. This book gives you just what you have long wanted.

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THE ADRENAL HORMONES IN MEDICAL PRACTICE

FRANK A. HARTMAN, PH.D.

COLUMBUS, OHIO

Not only are adrenal preparations widely used in the treatment of Addison's disease but workers are finding application for their use in other clinical conditions. Unfractionated extract from which the epinephrine has been removed possesses the advantage that the hormones exist in as nearly a natural state as it is possible to obtain them. Fractionation modifies some of the hormones and may decrease their potency. The crystalline products probably are not the original hormones but are more stable forms derived from them. Desoxycorticosterone, the only compound that has been synthesized, represents only one substance from the adrenal which can cause sodium retention. Sodium factor is another.

Although the number and nature of the original hormones are not clear, their functions are beginning to be understood. A knowledge of the latter is necessary for rational therapy.

FUNCTIONS

Permeability.—The adrenal plays an important part in the regulation of membrane permeability. Winter and I [1] showed that skeletal muscle from adrenalectomized rats shifted its water more readily in either direction than did muscle from normal animals. Water entered more rapidly from hypotonic solution and left more rapidly in hypertonic solution. Hegnauer and Robinson [2] found that both skeletal muscle and erythrocytes in adrenalectomized animals absorbed water. Harrop [3] observed that water was absorbed by the cells from the interstitial fluid after adrenalectomy. The negative results of Ponder and Gaunt [4] on modified permeability in the adrenalectomized rat might be explained by the fact that the muscles of their animals already contained a greater percentage of water than did those of the controls. The Angerers [5] have shown that adrenalectomized frogs take up abnormal amounts of water and that the skeletal muscle, because it holds an excess of water, imbibes less water from a hypotonic solution than does normal muscle.

The blood capillary walls share in this increased permeability so that the blood volume decreases (Athanasiu and Gradinesco [6]) and blood pressure falls for this and other reasons. The loss of blood volume is due not so much to a negative water balance in the body as it is to a redistribution of water. Administration of adrenal extract without extra fluid will restore the normal plasma volume and blood pressure (Swingle and his associates [7]).

Electrolyte Metabolism.—Further evidence of a general cellular disturbance is found in the electrolyte changes which occur. This is not limited to excessive loss of sodium and retention of potassium by the kidney. The increase of potassium in erythrocytes and in skeletal muscle cells and the shift of potassium from the liver and heart indicate a fundamental change in cell metabolism. Administration of adrenal extract to adrenalectomized animals reestablishes normal potassium relations. Indeed such an extract influences normal animals, depressing the usual release of potassium from skeletal muscle which occurs during stimulation (Tipton [8]).

General Metabolism.—Evidence is conflicting as to whether or not the basal metabolic rate of patients suffering from Addison's disease is subnormal (Greene, Rowntree, Swingle and Pfiffner; [9] Marañon, Calvo Pena and Ossorio Florit [10]). In adrenalectomized animals the fall averages 25 per cent of the total metabolism (Marine and Baumann; [11] Aub, Forman and Bright [12]). Any treatment (unfractionated extract, cortin fraction, sodium factor, desoxycorticosterone or sodium salts [Brownell and Hartman [13]]) which main-

From the Department of Physiology, Ohio State University.

Read before the Section on Pathology and Physiology at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 4, 1941.

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tains a good clinical condition also maintains basal metabolism at the normal level. Overdosage apparently does not raise the metabolism further.

The metabolic disturbances which are present in adrenal insufficiency might be due to changes in the circulatory or nervous system. A recent study of isolated tissues shows that these factors are not solely responsible. In a late stage of insufficiency the metabolism of kidney (Crismon and Field [14]) and liver slices (Tipton [15]) is decreased as much as 25 per cent. Reduction in enzyme activity may be a factor. The deaminization of amino acids by kidney tissue is reduced (Jiménez-Díaz [16]). This can be returned to normal or above by adrenal extract or by desoxycorticosterone in large amounts (Russell and Wilhelmi [17]). The rate of oxidation of pyruvate, succinate and citrate by the kidney is also decreased after adrenalectomy.[17] This was shown by Tipton [15] to be true for the liver.

Carbohydrate Metabolism.—Of the various foodstuffs, our present knowledge indicates that carbohydrate is most affected in adrenal insufficiency. Carbohydrate absorption is reduced (Cori and Cori [18]). This reduction, coupled with a possible increased utilization, may account for the flattened dextrose tolerance curve found in patients with Addison's disease (Thorn, Koepf, Lewis and Olsen [19]). The ability to form carbohydrate from noncarbohydrate sources is diminished or abolished. Thus relatively short starvation lowers the liver glycogen. On the other hand, large doses of adrenal extract, corticosterone, dehydrocorticosterone or Kendall's compound E can raise the liver glycogen considerably above the normal level (Long, Katzin and Fry [20]). The decreased fasting blood sugar observed by many workers, notably Britton and Silvette,[21] may be accounted for by increased utilization and diminished glyconeogenesis.

The metabolism or rate of energy liberation of the cell may well be the determining factor in the permeability characteristic of the membrane. Small permeability effects in each cell make a large total when all cells are considered.

The action of the adrenal cortex is not restricted to a single tissue. Indeed it is quite possible that all tissues are involved in varying degrees. The failure of the kidney to reabsorb sodium may be associated with its reduced metabolic activity. The whole question of carbohydrate storage, glyconeogenesis and carbohydrate and fat oxidation may be concerned with metabolic disturbances of the liver.

Much of the changed metabolism is merely a reduction in the rate of normal processes. It may become serious only when continued over a long period or when stress creates an unusual demand.

Relation to Vitamins.—The effect of the adrenal on other metabolic processes is shown in deficiencies of vitamin B_1 and C. Injection of an extract free from these vitamins retards the onset of symptoms of avitaminosis. However, it does so only while some vitamin is present (Lockwood and Hartman;[22] Lockwood, Swan and Hartman [23]). It might be due to a protection of the vitamin against destruction.

Pigmentation.—The pigmentation of Addison's disease may be the result of a disturbance in enzyme action. It is unaccounted for by the absence of any known adrenal factor. It is probably specific because it has been known to be present for fourteen years before the onset of serious symptoms. Moreover, it is peculiar to man, as no bona fide instances of pigmentation have been discovered in adrenalectomized animals. Treatment with adrenal extract in some cases caused disappearance of the pigmentation.

Lactation.—Cortilactin, a factor described some years ago by Brownell and his associates,[24] has recently been prepared in our laboratory by isoelectric precipitation. It affects the metabolism of the lactating rat. When supplemented by other fractions of the adrenal, it enables an adrenalectomized rat to raise 100 per cent of her pups with growth curves in the normal range. Cortilactin has no effect on glyconeogenesis.

Relation to the Nervous System.—It has been known since the time of Addison that the nervous system is affected by adrenal insufficiency. That these effects may be primary is indicated by the psychoneural disturbances which may appear in Addison's disease before other changes are manifested. These consist of mental fatigue, insomnia, restlessness and abnormal reactions in the sensory apparatus.

Adrenal cortex extract has been shown objectively by experiments of Liddell and his associates [25] on sheep to influence the nervous system. A neurosis was produced by a conditioned motor reflex. This was characterized by extreme excitement, uncooperative behavior and spontaneous, nervous twitching movements. The extract after a few injections quieted the animal, increased the vigor of the conditioned reaction and decreased the frequency of the nervous movements. The effects persisted for more than twenty-four days after the last injection.

Hitchcock, Grubbs and I [26] found that adrenal cortex extract reduced oxygen consumption in normal human beings undertaking moderate exercise. This was confirmed by Missiuro, Dill and Edwards.[27] The effect persisted for a few weeks after the extract had been discontinued. This reminds one of the after-effects on sheep and suggests action through the nervous system.

The adrenal, through its influence on metabolism, permeability and enzyme action, and probably by its effect on the nervous system, plays a dominant role

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in the whole organism. It is obvious that treatment of adrenal insufficiency by a single fraction or crystalline compound cannot be sufficient when more than one hormone is involved.

TREATMENT

Addison's Disease.—The treatment of Addison's disease should proceed along three lines: First and most important, the missing hormones should be replaced. Nothing can adequately act as a substitute. Second, the administration of sodium salts and fluid to replace losses incurred from the missing sodium factor will not only facilitate recovery but will reduce the amount of extract required. Likewise the administration of dextrose, especially during a crisis, tends to correct the hypoglycemia that is sometimes present in the late stages. Third, prevention of unnecessary stress reduces the hormone needed and hastens recovery.

Often the patient with Addison's disease is first seen by the physician at or near a crisis. Therefore, one should begin at that stage.

The patient should be treated as in shock, being kept warm with artificial heat if necessary and given intravenous injections of physiologic solution of sodium chloride and dextrose solution together with large amounts of adrenal cortex extract. Intravenous injection of the extract should not be continued because repeated intravenous injections render the patient refractory to the sodium factor.[28] All but very limited physical examination and questioning should be avoided until the patient has recovered, because any additional stress may cause death. It is best to withdraw very little blood before the patient shows improvement. Intravenous treatment should be repeated in a few hours if the patient does not show improvement. In any event, subcutaneous injections of extract should be instituted and continued every two or three hours for the first day, after which the interval can be gradually increased until, with complete recovery, the daily extract should be divided into two, or better three, doses. Apparently the extract is readily destroyed or excreted. As soon as food and liquids are tolerated, the patient should be encouraged to eat and drink to replenish the water and salt which have been lost through the kidneys. Sodium salts in the form of chloride, bicarbonate or citrate should be given by mouth. The optimum amount must be determined by trial.

Some patients with Addison's disease are maintained very well by sodium chloride alone; others are not. This may indicate insufficiency of the sodium factor alone. Loeb [29] described a patient so maintained. Many patients are helped by sodium salts but need adrenal cortex extract as well. A few patients show no improvement with these salts. Occasionally the stomach does not tolerate them.

Restriction of potassium in the diet may be helpful. Wilder and his associates [30] found that the amount of potassium (4 Gm. daily) contained in a normal diet may be sufficient to precipitate a crisis, owing to the increased loss of sodium. Preparation of the diet is laborious. Sustained cooperation of the patient because of the unpalatableness of the diet is also a drawback.

As the patient improves he may be permitted to take up his normal activities gradually, but treatment must be continued and stresses avoided. With the slightest return of symptoms, the extract must be increased until they disappear, after which a lower dosage can be resumed. The optimum dosage for each patient must be determined by trial. Many patients are given too little extract for maintenance and therefore easily succumb to an infection or unusual stress. It must not be forgotten that crises may appear with little or no warning and that each crisis tends to make the patient more difficult to treat.

Desoxycorticosterone acetate has been used with considerable success in the treatment of Addison's disease. Levy Simpson [31] reported beneficial effects while Thorn,[32] by the method of implantation, not only had striking success but avoided daily treatment. Dryerre,[33] however, found that injection gave a more profound effect than did implantation. Owing to the variation in the amount of material liberated, the pellet method of administering desoxycorticosterone acetate is less satisfactory and more dangerous than the injection method (Soffer, Engel and Oppenheimer [34]). Recently [35] it has been shown that desoxycorticosterone is effective when placed under the tongue in oil. A high sodium, low potassium diet should not be used as desoxycorticosterone causes considerable retention of sodium together with excretion of potassium.[36] One must avoid overdosage because it leads to hydremia. This may cause death from cardiac failure.[37]

Adequate carbohydrate must be fed whether desoxycorticosterone or adrenal cortex extract is used. The former does not support glyconeogenesis while the latter does not furnish enough carbohydrate factor unless a large amount of the extract is used. Desoxycorticosterone does not protect against some forms of stress.

Other Clinical Conditions.—There are undoubtedly many other clinical conditions in which adrenal insufficiency exists. Stresses increase the hormone requirement because, if the dosage is not raised above the maintenance level when patients with Addison's disease or adrenalectomized animals are placed under a strain, insufficiency develops. The histologic changes sometimes found in the adrenals also indicate that an individual is not always able to meet these requirements.

Stresses which increase the requirements of adrenal hormones are infections, toxins, shock, trauma, heat, cold and exercise. Many claims of a beneficial effect of adrenal cortex extract in a wide variety of ailments have been advanced. Despite justified skepticism, there is evidently a good basis for some.

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Reports of a beneficial effect of adrenal cortex extract on patients with an active infection must be received with considerable reservation.

The asthenia that may develop after the infection disappears is another matter. A good example is a case of streptococcic sore throat reported by Robbins.[38] The patient developed extreme weakness and a blood pressure of 55 mm. of mercury systolic and 35 mm. of mercury diastolic after the infection had disappeared. She was difficult to rouse and there appeared to be little hope of recovery. Within twelve hours after the injection of the extract her blood pressure had become 110 mm. of mercury systolic and 70 mm. of mercury diastolic and her appetite for food and drink returned.

There are undoubtedly cases of acute adrenal insufficiency which go unrecognized. In asthenia which cannot be attributed to any other cause this possibility should always be considered.

Adrenal preparations have sometimes appeared beneficial in certain cutaneous disturbances.

In cases of pemphigus abnormal concentrations of electrolytes in the serum were found to be similar to the values found in adrenal insufficiency. Two of three postmortem examinations revealed adrenal damage. Adrenal cortex extract and sodium chloride were very beneficial (Talbott, Lever and Consolazio[39]).

Grüneberg[40] obtained striking improvement with cortical extract in 12 cases of severe psoriasis out of 58.

Ludy and Applestein[41] reported benefit in half of their cases of allergic dermatitis treated with a glycerin preparation of the adrenal.

Carrie[42] found that administration of adrenal cortex extract decreased the intensity of the erythema produced by ultraviolet radiation.

In all of these conditions there might have been some change in permeability which adrenal cortex extract corrected.

The circulatory changes and fluid shift which occur in the crisis of adrenal insufficiency resemble those of surgical shock. Consequently adrenal preparations have been used to prevent surgical shock. Reed[43] studied 50 cases, making injections before and after the operation. Excessively rapid pulse was prevented and the gastrointestinal symptoms were mitigated. Selye and his associates[44] and Weil, Rose and Browne[45] found that adrenal cortex extract was effective in combating shock but that desoxycorticosterone was ineffective.

The pathologic changes produced in the adrenals from superficial burns indicate the possibility of adrenal insufficiency. In such conditions the symptoms that develop are similar to those in adrenal failure. We[46] treated 1 patient, beginning on the third day after severe burns when she had had convulsions and could not retain fluids. The response was similar to that obtained in the coma of Addison's disease. Wilson and his associates[47] treated severe burns with similar results.

Adrenal cortex extract has been used to mitigate the ill effects of fever therapy. Our group at Ohio State University has studied the plasma electrolytes under these conditions. Without treatment there was some loss of sodium chloride. With the extract this was prevented. There was a decided difference in the subjective symptoms. Asthenia was reduced. Nausea and vomiting were lessened and the time required to recover was decreased.

Therefore the results tend to indicate that, while the decreased loss of electrolytes undoubtedly plays a role in the alleviation of the distress caused by fever therapy, there is a further action by the extract. Subjective observations indicate an effect on the central nervous system. Adrenal cortex extract removes apprehension on the part of the patient. He has fewer or no irrational periods. He is less restless and is more resistant to sedatives.

In cases of human pregnancy symptoms resembling those found in adrenal insufficiency may develop. Some years ago we[48] treated such a patient with adrenal cortex extract with considerable success, but not until Freeman, Melick and McClusky[49] treated 78 pregnant women suffering from nausea and vomiting was there sufficient evidence for serious consideration. The beneficial results obtained by these workers as well as by Stemmer[50] and also by Wagner[51] indicate that adrenal cortex extract may prove to be a valuable adjunct in the treatment of vomiting of pregnancy.

This brief review indicates the possibilities of adrenal cortex preparations. Although they are specific for Addison's disease, a much wider application may be found in other clinical conditions. Judicious experimentation will be required to establish their use further. One may look forward to the day when they will play a part in general practice.

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Spectacles and the Microscope.—The invention of the microscope, which had such important bearing on the progress of medicine, may be attributed to the influence of the spectacles trade on the science of optics. This science had engaged the attention of Euclid (about 300 B. C.), of Ptolemy (A. D. 127-151) and of the Arab Alhazan in the eleventh century, but no practical use was made of the possibility of magnification by curved surfaces. Roger Bacon had realized the value of lenses as an aid to sight, but after he was imprisoned his works were hidden until 1733, so that his contributions to optics did not influence the development of the microscope. Spectacles were invented in Italy about 1285 by Salvino degli Armati, but it was not until the sixteenth century that the spectacles trade developed to any considerable degree. The consequent revival of optical science led to the invention and development of both the simple and compound microscope.—Stern, Bernhard F.: Society and Medical Progress, New Jersey, Princeton University Press, 1941.

THROMBOSIS OF THE LATERAL SINUS

AN ANALYSIS OF RESULTS OBTAINED IN ONE HUNDRED AND NINETEEN CASES

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Thrombosis of the lateral sinus is the most frequently encountered intracranial complication of mastoiditis, and because of the large number of diseases which it may simulate it is of great interest not only to otologists but to internists. It is my purpose in this paper to present clinical observations made over twelve years on 119 patients with thrombosis or phlebitis of the lateral sinus admitted to the Manhattan Eye, Ear and Throat Hospital. As there is no standard for reporting data on thrombosis of the lateral sinus it would be difficult to compare our data with those reported by other investigators. Therefore, no attempt has been made to survey the literature. Most of the observations were made and recorded by me while the patients were under the care of the various members of the surgical staff.

The cases are divided into two series, those occurring from 1929 to 1936 inclusive, before the advent of sulfanilamide and its derivatives, and those occurring from 1937 to 1940 inclusive, after the advent and use of these drugs. As far as possible, a comparison is made of the two series to determine whether any progress has been made in the management of thrombosis of the lateral sinus.

INCIDENCE OF THROMBOSIS OF THE LATERAL SINUS AND GENERAL ANALYSIS OF CASES

From 1929 to 1936, 4,983 mastoidectomies, including simple, modified radical and radical operations, were performed. The yearly number varied from 495 in 1936 to 848 in 1931, averaging 623 (table 1). During these eight years 95 cases (1.9 per cent) of thrombosis of the lateral sinus were encountered. The smallest yearly number was 8 (in 1936), the largest 14 (in 1931) and the average about 12. Thirty-one patients (32.6 per cent) died. In 4 cases of definite meningitis death occurred within twenty-four hours after admission. If these 4 hopeless cases are deducted the mortality is reduced to 28.4 per cent. It could have been still further reduced had my associates and I been less conservative and operated on more patients with signs suggestive of sinus thrombosis, who recovered after free exposure of the lateral sinus. The highest mortality (50 per cent) was in 1931. In that year also we encountered a comparatively large number of patients with severe orbital cellulitis which terminated in thrombosis of the cavernous sinus and death. It seems that in some years the micro-organisms are more apt to enter the blood stream, depending on the virulence of the infections of the upper respiratory tract, which varies from year to year. This fact must be remembered when the effects of chemotherapy on the occurrence of mastoiditis and its complications are evaluated.

From 1937 to 1940, 1,854 simple, modified radical and radical mastoid operations were performed (table 2). The smallest yearly number was 377 (in 1940) and the largest 598 (in 1937), the average number being 463.5. There were 24 cases (1.2 per cent) of thrombosis of the lateral sinus within four years. The average number per year was 6, i. e. half of the first series. Three patients (12.5 per cent) died.

During the twelve year period 6,837 mastoidectomies were performed. The total number of cases of thrombosis of the lateral sinus was 119 (1.7 per cent). In each series the lateral sinus on the right was more frequently involved than that on the left; the uneven incidence may have been due to the fact that the right is usually larger than the left and is therefore covered by more cells in the mastoid. The cases of acute mastoiditis exceeded cases of chronic mastoiditis by considerable numbers in both series. The number of males and females in the two series was about the same.

Because of the unequal length of time of the two series, which makes comparison difficult, I shall consider the statistical material of both with regard to instances in which the introduction of sulfanilamide and its derivatives had no appreciable effect.

In table 3 it is shown that in the preponderance of cases thrombosis occurred in patients between the ages of 1 and 10 years. The frequency of this disease after the age of 20 diminishes considerably. In elderly patients it seems to be rare.

TABLE 1.—*Analysis of the Cases of Mastoidectomy*

	Series 1, 1929 to 1936								
	1929	1930	1931	1932	1933	1934	1935	1936	Summary
Number	497	570	848	642	690	604	673	495	4,983
Sinus thrombosis	13	13	14	13	12	11	11	8	95
Percentage	2.6	2.3	1.6	2	1.7	1.8	1.6	1.7	1.9
Males	8	3	6	8	7	6	4	4	46
Females	5	10	8	5	5	5	7	4	49
Mastoiditis									
On right	4	9	6	7	7	2	7	5	47
On left	6	4	6	4	4	7	2	3	36
Bilateral	3	..	2	2	1	2	2	..	12
Acute	10	9	12	11	9	11	10	7	79
Chronic	1	1	2	1	..	..	..	1	6
Acute and chronic	2	3	2	..	2	..	1	..	10
Hemolytic streptococcus bacteremia	6	2	1	4	6	7	6	6	38
Hemolytic staphylococcus bacteremia	..	..	..	1	..	..	1	..	2
Type III pneumococcus bacteremia	..	1	3	2	1	1	2	..	10
Deaths	4	4	7	3	4	4	3	2	31
Percentage	30.7	30.7	50	23	33.3	36.3	27.2	25	32.6*

* If one deducts 4 hopeless cases, the corrected mortality is 28.4 per cent.

THE WALLS AND CONTENTS OF THE LATERAL SINUS

In 35 cases the walls of the lateral sinus were apparently normal (table 4). After incision of these walls a thrombus was found in 11 cases (31.4 per cent). That the appearance of the sinus wall gives no indication of what may be within is well known to otologists. In the presence of a perisinal abscess one has more reason to suspect a sinus thrombosis. Among 37 cases of perisinal abscess a clot was found in 26 (70 per cent).

There is always the possibility of error in determining whether there is a clot in the lateral sinus. In some cases of free bleeding a parietal thrombus may be present but cannot be demonstrated.

Type of Mastoid.—In 81 cases the mastoid was pneumatic, in 15 noncellular and in 2 infantile, and in 21 the type was not recorded. In the majority of cases in which there was an apparently normal sinus wall and a clot within, the mastoid was pneumatic, contrary to the prevailing impression that thrombosis develops more frequently in poorly pneumatized bones.

Read before the Section on Laryngology, Otology and Rhinology at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 6, 1941.

POSTOPERATIVE COMPLICATIONS

In the first series there were 15 cases of meningitis terminating in death (table 5). In the second series there were 2, with 1 recovery and 1 death. In 5 cases in series 1 there was abscess of the brain, with 1 recovery and 4 deaths. In 2 of these the thrombosis

TABLE 2.—*Analysis of the Cases of Mastoidectomy*

	Series 2, 1937 to 1940					
	1937	1938	1939	1940	Summary	Total, 1929-1940
Number	598	475	404	377	1,854	6,837
Sinus thrombosis	3	9	7	5	24	119
Percentage	0.5	1.9	1.7	1.3	1.2	1.7
Males	2	5	6	4	17	63
Females	1	4	1	1	7	56
Mastoiditis						
On right	2	7	4	3	16	63
On left	1	2	2	2	7	43
Bilateral	..	..	1	..	1	13
Acute	2	6	5	3	16	95
Chronic	..	1	..	1	2	8
Acute and chronic	1	2	2	1	6	16
Hemolytic streptococcus bacteremia	1	3	2	1	7	45
Hemolytic staphylococcus bacteremia	..	1	..	..	1	3
Type III pneumococcus bacteremia	..	..	..	1	1	11
Deaths	0	1	2	0	3	34
Percentage	0	11	28	0	12.5	28.5*

* Corrected total mortality 25 per cent (compare with table 1).

of the lateral sinus and the abscess of the brain were not recognized during life but were observed at autopsy, the abscess in 1 being cerebellar and in the other of a frontal lobe. One could see in the latter the tributary vein along which the infection had traveled against the blood stream to the frontal lobe. In the third case, operation on the sinus and the jugular vein was delayed and an abscess of the temporosphenoid lobe developed. In the fourth case the inner wall of the right lateral sinus was injured during operation. A superficial cerebellar abscess developed and was drained. Later, signs of a cerebellar abscess on the left appeared, for which an operation was performed. At autopsy it was disclosed that this abscess was fibrotic and practically obliterated, but in the right part of the cerebellum one large and three small abscesses were observed. The fifth patient, who recovered from a cerebellar abscess, had both lateral sinuses obliterated and one jugular vein resected. There were no abscesses of the brain in the second series.

TABLE 3.—*Age Incidence*

	Series 1 and 2	
Age of Patient	Number of Cases	Percentage
1 to 5 years	17	15.8
6 to 10 years	39	32.7
11 to 15 years	13	12.1
16 to 20 years	12	10.1
21 to 25 years	4	3.7
26 to 30 years	11	9.1
31 to 35 years	5	4.2
36 to 40 years	9	7.5
41 to 50 years	5	4.2
51 to 60 years	3	2.8
61 to 70 years	1	0.9

There were 2 cases of erysipelas in the first series. In 1 of these onset of the disease preceded operation on the sinus and the jugular vein by two weeks, and in the other, in which the lateral sinus was injured during the mastoid operation, it followed ten days after operation on the sinus and the jugular vein.

There was 1 case of labyrinthitis and paralysis of the facial nerve in each series. Involvement of the sixth cranial nerve was recorded in 2 cases in the first and in 1 in the second series. In 1 case in series 1 the hypoglossal nerve was involved, indicating thrombosis of the anterioir condyloid vein. Disturbances of the ninth, tenth and eleventh cranial nerves, which may become implicated in thrombosis of the lateral sinus and the bulb of the jugular vein, were not recorded.

In series 2 there was the unusual complication of a tumor of the brain. In the right lateral sinus an infected thrombus was found. The patient continued to suffer extreme pain. There were other symptoms and signs pointing to a neoplasm of the brain, for which the patient was operated on in another hospital. A spongioblastoma of the left parietal lobe was found.

The other complications listed in table 5 are self explanatory.

METASTASIS

Metastasis occurred in 25 cases (26.3 per cent) of the first series (table 6). In 18 there was a positive blood culture and in 9 a thrombus. Metastasis was more common in the acute cases and appeared with much greater frequency after operation on the lateral sinus and the jugular vein. The frequency after operation coincides with the observation of Meltzer.[1]

TABLE 4.—*Changes Seen at Operation on Lateral Sinus*

	Series 1 and 2		
	Before Incising Sinus: Number of Cases	After Incising Sinus	
		Free Bleeding	Clot
Normal sinus	35	24	11
Thickened or discolored wall	19	14	5
Granulations only	12	5	7
Perisinal abscess	37	11	26
Incomplete data	16		
Summary	119	54	49

Metastatic abscesses appeared in either the large joints or the subcutaneous tissues or both. There was one exception, however, in that multiple abscesses developed in the lungs of a patient who had staphylococcic bacteremia and died. The reason for the rare occurrence of metastasis to the viscera is not known. It is possible that the interstitial tissues provide a better hiding place for the bacteria.

Metastasis, as a complication of sinus thrombosis, did not seem in our cases to add to the seriousness of the disease. There were 7 deaths (28 per cent).

Table 6 shows that in a considerable number of cases of metastasis the walls of the sinus looked normal. This is further evidence that a normal appearance of a sinus wall is not to be relied on. There were no cases of metastasis in the second series.

Temperature.—The temperature curve varied. In 83 cases (69.7 per cent) it showed the characteristic fluctuations, ranging from 97 to 108 F.; in 15 it was sustained at a high level; in 19 it was irregular, and in 2 it was within normal limits. There were severe chills in 46 cases (38.6 per cent).

After operation on the lateral sinus and the jugular vein the temperature returned quickly to normal and remained thus in 18 cases. There was a slow return to normal in 49 cases, recurrent sepsis in 18 and continued sepsis and death in 34.

1. Meltzer, P. E.: Treatment of Thrombosis of the Lateral Sinus, Arch. Otolaryng. **22**: 131 (Aug.) 1935.

PAINS OF GREAT SEVERITY

In 14 cases severe, persistent, deep boring pain that did not respond to analgesics and was suggestive of the formation of an abscess of the brain dominated the clinical picture. Neurologic consultation resulted in a decision to wait until the suspected abscess had been walled off and more definite signs of localization had developed. In 2 cases already referred to autopsy revealed not only unsuspected thrombosis of the lateral sinus but in 1 a cerebellar abscess and in the other an abscess of the frontal lobe. Timely recognition and intervention might have resulted favorably. That sinus thrombosis alone may produce severe pain and other symptoms simulating those of abscess of the brain is shown by the following case:

A man aged 27 was admitted to the hospital on Nov. 15, 1931 with an acute exacerbation of chronic mastoiditis on the left. The following day a radical mastoid operation was performed. An epidural abscess over the middle fossa was found. There were bubbles of gas escaping from the pus, which yielded a pure culture of colon bacilli. The wall of the lateral sinus appeared normal. The blood culture was negative. Because of extremely severe pain in the left side of the head, the epidural abscess and the normal appearance of the wall of the lateral sinus, the temporosphenoid lobe was explored, but no pus was found. On November 19 the lateral sinus was incised. A clot, extending from the knee to the bulb of the jugular vein, was found. After the clot was removed there was free bleeding from the torcular end but no bleeding from the bulb. The jugular vein was then resected. Because of the continuation of chills and a high temperature, it was thought advisable to revise the operation. This was done, but the patient died of meningitis.

TABLE 5.—*Postoperative Complications*

	Series 1		Series 2	
	No. of Cases	Deaths	No. of Cases	Deaths
Meningitis	15	15	2	1
Subdural abscess	2	1	..	..
Abscess of brain	5	4	..	..
Temporal	1	1		
Cerebellar	3	2		
Frontal	1	1		
Labyrinthitis	1	1	1	0
Paralysis of facial nerve	1	1	1	0
Paralysis of abducens nerve	2	1	1	0
Erysipelas	2	0	..	..
Diabetes	2	1	..	..
Lobar pneumonia	5	1	..	..
Bronchopneumonia	3	2	1	1
Empyema of pleura	2	1	1	1
Nephritis and uremia	1	1	..	..
Herpes zoster	1	1	..	..
Tumor of brain	..	..	1	0

The fatal outcome in this case impresses one with the advisability of investigating and incising even a normal appearing lateral sinus before exploring the brain for a supposed abscess when there are only suggestive signs and no localizing ones.

In 2 of our cases severe abdominal pain suggesting an acute abdominal condition was a prominent symptom. In 1 an appendectomy was performed. The appendix was practically normal. In order to avoid surgical procedures on the abdomen in such cases it should be kept in mind that spastic abdominal pain may occasionally be caused by reflex irritation of the vagus nerve.

DIAGNOSIS

As a rule it is not difficult to make a correct diagnosis of thrombosis of the lateral sinus. It is of course essential that other diseases, such as erysipelas, pneumonia, pyelonephritis, acute bacterial endocarditis, acute tonsillitis and acute nasopharyngeal infections, which may cause symptoms similar to those induced by thrombophlebitis, should be ruled out. The closest cooperation between the otologist and the internist or the pediatrician is required. That thrombosis of the lateral sinus may exist without clinical signs and symptoms is well known. In 2 of our cases in which this disease was unsuspected it was discovered accidentally at the mastoid operation, in 2 other cases at the postmortem examination and in 1 by histologic examination of the temporal bone.

TABLE 6.—*Incidence of Metastasis*

	Series 1		Series 2
	Number of Cases	Positive Blood Culture	No Metastasis
Metastasis	25	18	
Acute otitis	23	16	
Chronic otitis	1	1	
Acute and chronic otitis	1	1	
Metastasis before operation on sinus	3	1	
Metastasis after operation on sinus	22	17	
Deaths from acute otitis	7 (28%)	5	
Deaths from chronic otitis	0		

	Status of Sinus Wall in Cases of Metastasis		
	No. of Cases	Thrombus	Free Bleeding
Normal wall	7	3	4
Thickened wall	5	1	4
Granulations only	2	1	1
Perisinal abscess	6	4	2
Condition not stated	5	..	..

The clinical picture of infection of the lateral sinus is usually recognized by the characteristic temperature curve, made up of quick rises and abrupt falls, and by accompanying rigor, profuse perspiration, metastatic abscesses, progressive anemia and a positive blood culture.

Blood Cultures.—Studies of blood cultures are of paramount importance in the diagnosis of thrombosis of the lateral sinus. The advent of sulfanilamide and its derivatives has given the early recognition of bacteremia even greater significance than it had heretofore.

TABLE 7.—*Analysis of Blood Cultures*

	Number of Cases	Before Operation* Only	After Operation Only	Before and After Operation	Thrombus	Deaths
		Series 1				
Hemolytic streptococcus	38	27	3	8	17	13 (34%)
Hemolytic staphylococcus	2	1	1	0	0	0
Pneumococcus, type III	10	9	0	1	5	7 (70%)
Streptococcus viridans	1	1	0	0	1	0
Positive	51	38	4	9	23	20 (39%)
Negative	38†	..	..	..	17	11 (25%)
		Series 2				
Hemolytic streptococcus	7	5	1	1	4	0
Hemolytic staphylococcus	1	0	1	0	1	1
Pneumococcus, type III	1	0	0	1	0	0
Colon bacillus	1	1	0	0	1	0
Positive	10	6	2	2	6	1 (10%)
Negative	14	..	..	..	3	2 (14%)

* I. e., operation on the lateral sinus.
† No record in 6 cases.

In the first series the culture was positive in 51 cases (table 7). In 38 of these a hemolytic streptococcus was found and in 10 Pneumococcus type III. The latter number is unusually large but can be explained by the fact that our hospital draws patients from many communities. It also accounts for the high mortality rate

in series 1, as 70 per cent of the cases of type III pneumococcus bacteremia terminated fatally. A hemolytic staphylococcus was found in 2 cases and Streptococcus viridans in 1. In the second series the blood culture was positive in 10 cases. Of these, a hemolytic streptococcus was present in 7, Pneumococcus type III in 1, a hemolytic staphylococcus in 1 and the colon bacillus in 1. Whether Str. viridans and the colon bacillus can cause thrombosis of the lateral sinus is questionable, but in both of these cases a thrombus was demonstrated. In the two series combined the blood culture was positive in 61 cases (51.3 per cent). In 6 cases it became positive after operation on the lateral sinus and the jugular vein, which seems to show that the operations did not prevent the bacterial invasion of the blood stream.

TABLE 8.—*Examination of the Ocular Fundi* *

	Series 1 and 2				
	Number of Cases	No Change	Dilatation of Veins	Optic Neuritis	Papilledema
Sinus thrombosis	42	25	5	1	11
Cerebral abscess and sinus thrombosis	2	1	..	..	1
Cerebellar abscess and sinus thrombosis	3	..	..	..	3
Meningitis and sinus thrombosis	8	1	1	2	4
Uremia and sinus thrombosis	1	..	..	1	..
Summary	56	27	6	4	19

* There was no record of examination in 63 cases.

A negative blood culture does not exclude thrombosis of the lateral sinus, as was shown in series 1 in 17 cases and in series 2 in 3 cases. Therefore, a negative blood culture per se should not be an indication to delay operation when symptoms and signs point to an invasion of the blood stream.

Although laboratory tests, such as frequent blood counts and the determination of the sedimentation rate, may be of some help, I have observed the readiness with which some otologists discard their clinical judgment in favor of these tests and unduly delay operation on the lateral sinus. Time valuable in preventing the spread of the infection in the general circulation is thus lost.

The Tobey-Ayer test, properly performed and interpreted, was found to be a valuable aid, especially in cases of bilateral mastoiditis.

Ventriculography.—Thrombosis of the lateral sinus may at times be responsible for clinical signs and symptoms that suggest an abscess or tumor of the brain. When such symptoms appeared it was necessary to employ ventriculography both to clarify the diagnosis and to locate the lesion. After one obtains negative results from this procedure in some puzzling cases in which there are atypical manifestations the only requirement is to recognize that some otogenic intracranial disease is present, and, as thrombosis of the lateral sinus is the most frequent complication and the least dangerous to investigate, the exploration of that sinus before one does anything else is desirable.

Cerebral symptoms simulating those referable to abscess of the brain may occasionally occur after an operation on the lateral sinus and the jugular vein. It has been assumed that these symptoms result from a lack of collateral circulation following the operation, when the aural pathologic condition involves the side of the larger lateral sinus and the larger jugular foramen. In 1 of our cases, after an operatioin on the lateral sinus, signs and symptoms simulating an abscess of the temporosphenoid lobe developed. An exploratory operation did not reveal an abscess. The neurologist then thought that the signs might be due to a small lateral sinus on the uninvolved side. Autopsy revealed suppurative meningitis but did not reveal an abscess of the brain or abnormalities of the venous sinuses.

In order to avoid dangerous and unnecessary explorations of the brain, as in the aforementioned cases, an attempt has been made by Ersner and Myers [2] to demonstrate by means of roentgen rays the size of the lateral sinus and the jugular foramen. However, Dr. Frederick Law, roentgenologist of our hospital, has expressed the opinion that this cannot be done with certainty.

Another possible aid in the interpretation of intracranial complications resulting from venous circulatory disturbances is preoperative and postoperative examination of the fundi of the eyes. The presence of papilledema before operation on the sinus and the jugular vein should be a sign that the venous return flow is probably already obstructed. This observation may help in the diagnosis of the severe reactions that occasionally result from lack of collateral circulation.

The eyegrounds were examined in 56 cases of thrombosis of the lateral sinus (table 8). In 19 papilledema was present, and in 8 of these there was an obturating thrombus. Only in cases complicated by meningitis or abscess of the brain was there increased intracranial pressure. In none of the cases in which recovery took place was there atrophy of the optic nerve. In a case of papilledema of 6 diopters in each eye, which lasted eight months, I made observations at weekly intervals. At no time was there any evidence of increased intracranial pressure, and the vision returned to normal.

INTERVAL BETWEEN MASTOIDECTOMY AND OPERATION ON THE SINUS

With regard to the interval between mastoidectomy and operation on the sinus and the jugular vein, the cases fall into four groups (table 9):

Group 1, 35 cases in which symptoms of sepsis were evident from the start and in which thrombosis of the lateral sinus was diagnosed before or at the time of the surgical intervention on the mastoid. Operation was performed on the mastoid and the sinus at the same time. The mortality was 11.4 per cent.

TABLE 9.—*Interval Between Mastoidectomy and Operation on the Sinus and Jugular Vein*

	Series 1 and 2			
	At Time of Mastoidectomy	3 to 7 Days Afterward	8 to 14 Days Afterward	15 Days or Longer Afterward
Number of cases	35	35	28	19
Deaths	5 (14.2%)	11 (31.4%)	8 (28.5%)	8 (42.8%)
Corrected mortality*	4 (11.4%)	8 (22.8%)		

* Corrected by deducting 4 cases of meningitis, 1 from column 1 and 3 from column 2, in which death occurred within twenty-four hours after admission.

Group 2, 35 cases in which a sinus complication was discovered in three to seven days after mastoidectomy. The mortality was 22.8 per cent.

2. Ersner, M. S., and Myers, David: Aid to Interpretation of Intracranial Complications Resulting from Venous Circulatory Disturbances of the Temporal Bone, Offered by X-Ray of the Lateral Sinus and Jugular Foramen, Laryngoscope **43**: 800 (Oct.) 1933.

Group 3, 28 cases in which a sinus complication was recognized eight to fourteen days after the original operation. The mortality was 28.5 per cent.

Group 4, 19 cases in which thrombosis was not recognized until fifteen days or more had elapsed after mastoidectomy. The mortality was high, 42.8 per cent.

TABLE 10.—*Analysis of Fatal Cases*

	Number	Thrombus		Free Bleeding				+*	—
		Acute	Chronic	Acute	Chronic	Acute	Chronic		
Series 1									
Meningitis	15	14	1	9	1	5	..	11	4
Septicemia	8	6	2	3	1	3	1	5	3
Abscess of brain	4	3	1	3	..	..	1	2	2
Pulmonary complications	3	2	1	2	..	..	1	1	2
Subdural hemorrhage	1	1	..	1	..	..	..	1	..
Summary	31	26	5	18	2	8	3	20	11
Series 2									
Meningitis	1	1	..	..	..	1	..	..	1
Septicemia	1	..	1	..	1	..	..	..	1
Pulmonary complications	1	1	..	1	..	..	..	1	..
Summary	3	2	1	1	1	1	..	1	2

* +, positive blood culture; —, negative blood culture.

The foregoing statistics show that the earlier the operation on the lateral sinus is performed the better is the chance of success.

ANALYSIS OF THE FATAL CASES

In the first series there were 26 fatal cases of acute otitis as compared with 5 of chronic otitis (table 10). In the second series there were 3 fatal cases, 2 of acute and 1 of chronic otitis. There was an infected thrombus in 20 of the 31 fatal cases in series 1 and in 2 of the 3 fatal cases in series 2. The blood culture was positive in 20 in the first series and in 1 in the second.

Since the advent of sulfanilamide and its derivatives the prognosis of thrombosis of the lateral sinus has become so favorable that every death in series 2 demands an explanation. The first case belongs to that rare group in which there are cerebral symptoms simulating those of an abscess of the brain after an operation on the lateral sinus. Meningitis developed after several explorations of the brain. The second death was due to delay in operating on the lateral sinus and the jugular vein because of a negative blood culture and other conflicting results of tests. When the operation was performed sepsis was too far advanced and could not be controlled. The third death was due to severe hemolytic staphylococcic bacteremia occurring before sulfathiazole became available.

SEQUENCE OF OPERATIVE PROCEDURES ON THE LATERAL SINUS AND THE JUGULAR VEIN

Table 11 shows the sequence of operative procedures on the lateral sinus and the jugular vein, the cases being arranged in seven groups. The best results occurred in the group in which the jugular vein was not operated on. However, it so happened that in this group operation on the sinus was performed without delay and free bleeding was established from the torcular and bulbar ends. In the group in which the mortality was highest, operation on the sinus was deferred. It seems that a favorable outcome depends more on an early diagnosis and prompt operation than on the nature or the sequence of the procedures employed.

TREATMENT

The treatment was not uniform and depended on the views of the various members of the surgical staff. In the first series of cases ligation or resection of the jugular vein was practically a routine procedure. The present tendency at our hospital is to carry out the necessary operations on the mastoid and the lateral sinus. If sepsis continues and progress is unsatisfactory, then ligation or resection of the jugular vein is considered in order.

The treatment recommended in this paper is that used in our clinic.[3] It consists of free exposure of the lateral sinus. After iodoform plugs have been properly placed at the torcular and bulbar ends, the wall of the sinus and the thrombus, when one is present, are removed. Free bleeding is established if possible. When there is no bleeding from the bulbar end and sepsis is present, the jugular vein is ligated or resected. General supporting measures, including repeated transfusions of small quantities of blood, are always employed in the management of otitic sepsis.

Chemotherapy.—The advent of sulfanilamide and its derivatives has resulted in a tremendous improvement in the management of thrombosis of the lateral sinus. The amazing improvement in cases of meningitis, which is the usual cause of death from thrombosis of the sinus, is little short of miraculous. Because of the masking effect of the drugs on various signs and symptoms, their use is not recommended during suspected mastoiditis, before or after operation, unless a diagnosis of lateral sinus thrombosis or of another intracranial complication has been made. If sinus thrombosis is diagnosed, an operation on the lateral sinus is promptly performed. Chemotherapy is continued during the postoperative period and is especially useful in cases of persistent otitic sepsis. It gives the surgeon a sense of security provided he is reasonably certain that the focus has been dealt with thoroughly.

TABLE 11.—*Sequence of Operative Procedures on the Lateral Sinus and the Jugular Vein* *

Series 1 and 2	Number of Cases	Deaths	Percentage of Deaths
1. Exposure of sinus 2. Ligation of jugular vein 3. Obliteration of sinus	17	5	29.4
1. Exposure of sinus 2. Resection of jugular vein 3. Obliteration of sinus	29	8	27.5
1. Ligation of jugular vein 2. Exposure and obliteration of sinus	8	1	12.5
1. Resection of jugular vein 2. Exposure and obliteration of sinus	8	1	12.5
1. Exposure and obliteration of sinus	10	1	10
1. Exposure and obliteration of sinus 2. Ligation of jugular vein	13	4	30.8
1. Exposure and obliteration of sinus 2. Resection of jugular vein	15	6	40
No data as to sequence	16	5	31.2

* In 3 cases thrombosis of the lateral sinus was not recognized clinically but was observed at autopsy.

Successful therapy with sulfanilamide and its derivatives depends on the maintenance of definite concentrations of the drugs in the blood. Initial doses must be large enough immediately to establish the desired concentration (7 to 10 mg. per hundred cubic centimeters of blood), and subsequent doses should be sufficient to maintain the concentrations so established. It must be

3. Clinic of Dr. Francis W. White.

remembered that the likelihood of a relapse is great unless prolonged chemotherapy is employed. Use of the drugs should be continued for at least a week after a clinical cure has been effected.

Selection of Drugs.—In the treatment of hemolytic streptococcus bacteremia sulfanilamide is the drug of choice. For type III pneumococcus bacteremia sulfapyridine is used. For staphylococcic bacteremia, with the exception of staphylococcic meningitis, sulfathiazole should always be employed. The exception of staphylococcic meningitis is due to the fact that sulfathiazole does not pass over readily into the spinal fluid. Sulfapyridine is the preferable drug for use in cases of staphylococcic meningitis as well as in cases of unknown cause. However, at present sulfathiazole is the drug most commonly used by clinicians in the treatment of all types of infections.

Chemotherapy in our cases has more than doubled the rates of recovery. Examining the results on the basis of the different micro-organisms, one finds that all patients in series 2 with hemolytic streptococcus bacteremia have recovered. One patient with type III pneumococcus bacteremia and meningitis, comatose several days, got well. His recovery was the first from this type of meningitis to occur at our hospital. One patient with hemolytic staphylococcus bacteremia died before sulfathiazole was available.

I believe that with improved methods of administration of these drugs, with adequate doses and proper concentrations in the blood stream and with prompt and thorough operation on the lateral sinus the mortality rate will be still further reduced.

SUMMARY

In a study of 119 cases of thrombosis of the lateral sinus occurring during twelve years the cases are divided into two series: (*a*) those occurring before the advent of sulfanilamide and its derivatives (95 cases) and (*b*) those occurring since the advent of these drugs (24 cases).

By the use of these drugs great progress has been made in the management of thrombosis of the lateral sinus. Chemotherapy has more than doubled the percentage of recovery. There is every reason to be optimistic about the future of chemotherapy, and as time progresses it should be possible to reduce the mortality still further.

Early diagnosis and operation without undue delay will contribute greatly to the chance of recovery.

Abscess of the brain accompanying thrombosis of the lateral sinus is infrequent in patients with mastoiditis who are seen early and remain under continued observation.

Severe pain simulating that caused by abscess of the brain may be present with sinus thrombosis per se.

In cases of mastoiditis when there is a suspected intracranial complication without definite diagnosis, first to explore the lateral sinus for possible thrombosis is safer than to resort to explorations of the brain, because thrombosis of the lateral sinus is the most frequent intracranial complication and the one least dangerous to investigate.

Unusual situations may arise after an operation on the lateral sinus and the jugular vein, when signs and symptoms develop which arouse suspicion of an abscess of the brain, without the possibility of making a definite diagnosis. Before one explores the brain, all possible aids in diagnosis should be exhausted.

ABSTRACT OF DISCUSSION

DR. GEORGE M. COATES, Philadelphia: This is the first large series of cases that I have seen reported since the advent of the sulfonamide drugs. This therapy has favorably improved the mortality rate, but it should always be borne in mind that chemotherapy will not in itself be curative and may even cause disaster if relied on too much. Surgery on the primary focus in the mastoid process is always essential and early inspection of the sinus desirable whenever suggestive or suspicious signs or symptoms appear. Nor must we forget the use of serums plus frequent small transfusions of whole or citrated blood and other supportive treatment. I cannot agree with Dr. Hubert that metastasis did not seem to add to the seriousness of the disease, since he reports that in 28 per cent of the deaths this complication was present. Whether patients who have already acquired a mural thrombosis can recover through simple exposure of the sinus is controversial, but exposure and inspection are called for in cases presenting suspicious symptoms. That the right sinus was found in this series more frequently involved than the left conforms to previous findings. I am somewhat surprised that in the series presented 70 per cent of cases of perisinal abscess were accompanied by clot formation within the sinus. My own experience had not led me to expect such a large proportion. The observation that certain neurologic signs of brain abscess may be due to a thrombophlebitis is pertinent, and this possibility should always be considered. It makes for a temptation to delay operation. I feel that in these cases it is wise to uncover the sinus and investigate, although, as pointed out, there is a chance for error here also, as the sinus may well appear normal even if there is a clot of some character within. I would like to discuss the question of ligation of the internal jugular. The plan adopted by Dr. Hubert is a rational one. Ligation is not always either necessary or successful in preventing dissemination of the blood stream infection. Much depends on the amount of development of the collateral circulation, and this cannot be known in advance. Generally speaking, however, I feel happier in a septic case if the jugular can be tied without further jeopardizing the patient by the prolongation of the operation. It can always be done at a later period if deemed necessary. If the patient is not septic, even if free bleeding is not obtained from the lower end, I do not tie, but if sepsis develops later this is immediately done.

DR. F. W. DIXON, Cleveland: I have tried to analyze our results at Lakeside Hospital since the advent of chemotherapy. In the past four years, four hundred and fifty simple and radical mastoid operations have been performed. Thrombosis of the lateral sinuses have been observed in 10 cases. These have been further complicated in that there were cerebellar abscesses in 2, a frontal lobe abscess in 1, meningitis in 4 and arteriosclerosis in 1. Seven of the 10 patients died as the result of these complications. It is therefore impossible to arrive at any opinion as to the efficacy of chemotherapy in our series. Nevertheless I feel that chemotherapy has become a most powerful weapon in combating this disease, not forgetting those time tried remedies of careful nursing care postoperatively, not disturbing the patient, a nourishing high caloric diet and repeated small blood transfusions. Thrombosis of the lateral sinus cannot be judged by the appearance of its walls. This is due to the fact that thrombosis of the lateral sinus may develop in either of two ways: Either infectious erosion of the sigmoid plate occurs followed by a perisinal abscess and this followed by a mural or a completely obliterating clot, or it may by thrombophlebitis of the small veins leading to the sigmoid sinus or jugular bulb invade these structures while the sinus plate remains intact or normal in appearance. The deep boring pain which was mentioned is significant. In the last four months I have observed 4 such cases: 2 cases of lateral sinus thrombosis and 2 of perisinal abscess in which there were no symptoms of mastoid involvement save this deep boring pain, which was nocturnal and severe and was not relieved by ordinary sedatives. That certain eyeground changes take place has been frequently observed. This probably is due to the increased intracranial pressure or stasis and may occur postoperatively after jugular ligation and is hardly a reliable diagnostic aid. The problem of opening a suspicious sinus would depend on

the preoperative condition of the patient. If the temperature has been normal, if the blood cultures are negative, if repeated blood counts remain the same and if the condition is satisfactory, watchful waiting is justifiable. If, however, the infection is advancing and the patient is losing ground, then open the sinus. Now, if the sinus is opened and found filled with pus, shall we ligate or excise the jugular vein? This might depend on whether free bleeding is obtained from both ends. If this can be accomplished, one might wait before going a few inches lower and ligate the jugular vein. There are countless small veins within the mastoid passing into the dura and the jugular bulb. It is obviously impossible to eradicate all this thrombophlebitis. If free bleeding cannot be obtained at the jugular bulb, excise a portion of the jugular vein and try to drain this purulent lake.

DR. LOUIS HUBERT, New York: With regard to the mortality of cases in which metastasis has occurred, I said that it didn't seem to increase the seriousness of the condition, because in the 25 cases in which metastasis had occurred there were only seven deaths, or 28 per cent of the 25 cases. There is another impression that I want to clear up. A few years ago there appeared an article in the *Archives of Otolaryngology* in which it was said that at the Manhattan Eye and Ear Hospital we do excisions of the jugular vein in about 98 per cent of the cases. That isn't true. In about 50 per cent of cases we do resections, in 40 per cent ligations and in about 10 per cent we don't operate on the jugular vein at all. The reason we prefer excision of the vein is more for diagnostic purposes. We don't think it has any more value than a ligation.

SULFATHIAZOLE OINTMENT IN THE TREATMENT OF CUTANEOUS INFECTIONS

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Sulfathiazole administered orally, or parenterally as its sodium salt, is effective in the treatment of many serious infections. Sulfathiazole administered locally in an ointment base should be effective in the treatment of pyogenic cutaneous infections. Actually the sulfonamide drug to be incorporated in an ointment base should not be selected until a culture from the infected area has been taken and the type of invading organism has been determined. However, it is rarely possible to obtain uncontaminated cultures from cutaneous lesions and since the staphylococcus and, to a lesser extent, the streptococcus are the most frequent invaders of cutaneous lesions, sulfathiazole seemed to be the sulfonamide drug of choice for local application in an ointment base.

A 5 per cent sulfathiazole ointment was prepared by suspending finely powdered sulfathiazole, which had been sifted also through bolting cloth to remove large crystals, into equal parts of hydrous wool fat and vanishing cream. As a preliminary study the effectiveness of an ointment prepared with sodium sulfathiazole was compared with the sulfathiazole ointment. There was no apparent difference in the clinical efficacy of the two ointments. Sulfathiazole ointment has been used solely in this study because it can be prepared by the pharmacist with greater ease and with less cost to the patient than the sodium sulfathiazole ointment.

Patients with infected infantile and adult eczema, with impetigo, with acne vulgaris and with seborrheic dermatitis were primarily chosen for study. However, during the course of the study a few patients with other pyogenic infections of the skin received the ointment for clinical trial.

CLINICAL RESULTS

Infected Eczema.—Eight children with infected infantile eczema, ranging in age from 5 to 24 months, were admitted to the wards of the Harriet Lane Home for Invalid Children of the Johns Hopkins Hospital for treatment with sulfathiazole ointment. Each child had been treated previously in the outpatient department with either a boric acid ointment or a 2 per cent methylrosaniline solution, or both, without improvement. In 3 of the children the left side of the body was compressed with either boric acid solution, physiologic solution of sodium chloride or aluminum acetate solution, while the right side of the body was treated, in each instance, with sulfathiazole ointment. The compresses were applied continuously, whereas the ointment was applied the first thing in the morning, the last thing at night and once during the day. The areas over which the ointment was applied were wrapped with gauze and the children were restrained. Definite and similar improvement occurred on the two sides of the body in all 3 children after twenty-four to forty-eight hours of treatment. In 1 child the improvement on the side treated with sulfathiazole ointment was slower than on the side treated with compresses of physiologic solution of sodium chloride. The effectiveness of boric acid ointment and sulfathiazole ointment was compared in a similar manner in 5 children. In all of the children more rapid improvement occurred on the sides treated with sulfathiazole ointment. Treatment was carried out in each of the 8 children for a period of five to ten days. The concentration of sulfathiazole in the blood was determined every forty-eight hours. In 6 of the 8 children the blood concentration ranged from 2.0 to 3.5 mg. per hundred cubic centimeters during the entire period of treatment. Two children did not absorb the drug in detectable quantities. No changes were noted in the red blood cell counts, the hemoglobin determinations, the white blood cell counts and the microscopic examinations of the urinary sediment.

Sixteen children, ranging in age from 2 to 6 years, with infected eczema of the face, the arms and the legs were treated with sulfathiazole ointment in the outpatient department of the Johns Hopkins Hospital and the Union Memorial Hospital. The parents of each child were instructed to apply the ointment to the affected portions three times a day. No attempt was made to keep the ointment in place by bandaging. The infection was well controlled in each child after forty-eight to seventy-two hours of treatment, but the eczema remained unaltered. The children were then placed on a 5 per cent carbonis detergens ointment. One week thereafter the eczema in 13 of the children became reinfected. The sulfathiazole was then incorporated in the carbonis detergens ointment with dramatic and persistent improvement in the infection and the eczema.

Three children ranging in age from 22 to 36 months were seen in the private offices of one of us (E. L. K.) with eczema involving the skin between the buttocks and the thighs. The parents of the children were instructed to apply sulfathiazole ointment to the affected

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The Sulfathiazole Ointment was prepared and supplied to us by Hynson, Westcott and Dunning, Inc., Baltimore.

From the Protein Clinic, Department of Medicine of the Johns Hopkins Hospital and Medical School; the Harriet Lane Home for Invalid Children of the Johns Hopkins Hospital and Medical School, and the Medical Service of the Union Memorial Hospital.

parts every morning and every night and to keep the children as dry as possible during their sleeping hours. After ten to fourteen days of treatment the eczema had entirely disappeared and has not recurred in any of the children during the past two to three months. The concentration of sulfathiazole in the blood was determined in 2 of the 3 children every four days. The drug was not absorbed in either child. It was our impression that chronic irritation from ammoniacal diapers played an important role in the etiology of this type of eczema and that the effectiveness of the sulfathiazole ointment was attributed to its bacteriostatic properties.

An unusual opportunity arose to determine the effectiveness of sulfathiazole ointment in a 58 year old man complaining of a chronically infected eczema of the left lower leg for a period of thirty months.

The patient was admitted to the surgical service of the Union Memorial Hospital Sept. 1, 1940, twenty-four months after the onset of his symptoms. The primary purpose of hospitalization was the injection of varicose veins in the left leg. It had been the feeling of most observers that the presence of the varicose veins, even though they were not unusually prominent, played a definite role in the etiology of the patient's eczema. During twenty-four months prior to hospitalization persistent treatment with tar, sulfur and mercurial ointments had been ineffective. He had received two courses of roentgen therapy without beneficial results. For a six months' period following the injection of the varicose veins of the leg he had received, for long intervals, compresses with hot and cold physiologic solution of sodium chloride, boric acid solution and aluminum acetate solution. Hot potassium permanganate soaks and local applications of 4 per cent methylrosaniline solution had been ineffective in controlling the infection. Sulfanilamide and sulfathiazole had been given by mouth without success. Treatment with sulfathiazole ointment was begun six months after the injection of the varicose veins and thirty months after the onset of symptoms. The ointment was applied every morning and every night to the affected area and was kept in place by bandaging. After seven days there was dramatic improvement in the appearance of the lesion. The crusts had stopped forming, the weeping had subsided and epithelization had begun. After ten weeks of treatment the patient was discharged from the hospital completely well. The concentration of sulfathiazole in the blood was determined at regular intervals during the period of treatment. The drug was not absorbed in detectable quantities. No abnormal changes occurred in the red blood cell counts, the hemoglobin determinations, the white blood cell counts and the microscopic examinations of the urinary sediment. It is important to mention that on several occasions skin grafting to the affected area had been considered but had been declared hopeless because of the extensiveness of the infection.

Seborrheic Dermatitis.—A young woman of 17 years was seen in the private offices of one of us (E. L. K.) complaining of an infected seborrhea of the scalp during the late spring and the summer months since the age of 3 years. On various occasions she had received roentgen therapy to the scalp, and many different types of lotions had been applied locally. All treatment had been unsatisfactory. When she was first seen the scalp was covered for the most part with large scabs. A pure growth of Staphylococcus aureus was cultured from one of the involved areas. The patient was advised to remove all the scabs every morning and to apply sulfathiazole ointment every morning and every night to the affected parts. She was also instructed to wash the scalp every other morning with metaphen soap. After ten days of treatment the scalp was entirely well. She has remained well for the past six weeks by applying sulfathiazole ointment to the scalp once daily and washing the scalp once weekly with metaphen soap.

Five adult female patients with seborrheic dermatitis involving the external auditory canals and the auricles of both ears for varying periods of one to ten years have been treated with sulfathiazole ointment in the private offices of one of us (E. L. K.). Each patient had previously received local applications of 2 per cent methylrosaniline solution, 3 per cent ammoniated mercury ointment and alcohol without satisfactory results. The patients were instructed to apply sulfathiazole ointment every morning and every night to the auricles and to clean the external auditory canals, to the best of their ability, with a 5 per cent solution of sodium sulfathiazole. After forty-eight to seventy-two hours of treatment each patient noted dramatic relief from the symptoms, and after seven days the ears appeared perfectly well. All the patients have continued to apply the sulfathiazole ointment to the auricles before retiring at night, and there has been no recurrence of the lesions in the past four months. The concentration of sulfathiazole in the blood was determined at irregular intervals in 3 of the 5 patients during the period of treatment. The drug was not absorbed in detectable quantities in any of the patients. Two of the patients complained of intense pruritus, and for them sulfathiazole was incorporated in a 5 per cent carbonis detergens ointment with much relief of their symptoms.

Impetigo.—Ten children with impetigo involving the face and scalp and 2 children with impetigo involving the face, scalp and torso were treated with sulfathiazole ointment in the outpatient department of the Harriet Lane Home for Invalid Children of the Johns Hopkins Hospital. The parents of the children were instructed to remove all scabs every morning and to apply sulfathiazole ointment to the affected parts every morning and every night. After forty-eight hours definite improvement was noted in each child. After seven days all the children were well. The parents of the children commented on the simplicity and the efficacy of the treatment.

Acne Vulgaris.—Twenty nurses ranging in age from 16 to 21 years, from the Union Memorial Hospital, volunteered for treatment with sulfathiazole ointment. One nurse had severe acne, 15 had moderately severe acne and 4 had mild acne. The face alone was involved in 13 of the nurses, and the face and the back were involved in 7 of the nurses. The lesions had persisted for varying periods of one to five years. The nurses with mild acne had never before received treatment. The nurses with moderately severe and severe acne had been using various lotions containing sulfur. The one nurse with severe acne had received roentgen therapy prior to the use of sulfathiazole ointment. Each nurse was instructed to wash the affected parts every morning and every night with soap and water. No particular brand of soap was specified. They were told to use the sulfathiazole ointment as they would a vanishing cream or cold cream and to make the applications immediately after the affected parts had been washed. No dietary restrictions were made, and cosmetics were permitted. All lotions that they had previously used were discontinued. After two weeks of treatment 8 of the nurses were improved and 11 remained unimproved. One nurse discontinued the ointment because of lack of improvement and because the ointment had irritated her skin. After four weeks of treatment the 8 nurses that had improved continued to improve, and 2 nurses that had previously noted no beneficial results were definitely better. One nurse discontinued treatment because of lack of improvement.

After ten weeks of treatment 13, or 65 per cent, of the nurses were definitely improved and 5, or 25 per cent, of the nurses had failed to derive any benefit. Of the 13 nurses that improved with treatment, 4 had had mild acne and 9 had had moderately severe acne. Of the 5 nurses that failed to improve with treatment, 1 had had severe acne and 4 had had moderately severe acne. The 2 nurses that discontinued treatment had had moderately severe acne. Specimens of blood were obtained on all of the nurses at regular intervals in an attempt to determine whether or not the sulfathiazole was absorbed. The drug was not absorbed in any of the nurses.

Miscellaneous Observations.—Two adult patients with bacterial folliculitis involving the face for periods of one to three years had been fairly successfully treated with intradermal injections of staphylococcus toxin. However, there had been repeated recurrences of the lesions. The patients were instructed to apply the sulfathiazole ointment to the involved skin every morning and every night. After seven days there was definite improvement in each patient. In two weeks both patients declared that they were better than they had been since the onset of their symptoms. The state of improvement has been maintained for the past four months.

One adult patient had acquired an extensive furunculosis of both thighs following an operation for a rectal carcinoma. Many of the furuncles had been incised and all of the lesions had been covered with a 3 per cent ammoniated mercury ointment. The furuncles continued to appear and there was great concern for fear that the operative incisions might become infected. All the furuncles were covered with sulfathiazole ointment, and the skin adjacent to the furuncles was treated with sulfathiazole ointment three times a day. From the time the sulfathiazole ointment was first applied there was no further spread of the furunculosis, and the furuncles present at the time when treatment was begun immediately subsided.

Thirty-five patients with acute vesicular poison ivy dermatitis have received local applications of an ointment containing sulfathiazole and carbonis detergens. The lesions in each patient healed without infection. This seemed an important observation, as physicians generally refrain from prescribing an ointment to patients with acute vesicular dermatitis because of the possibility of promoting a secondary infection.

Thirty-three patients with cuts and 4 patients with small second degree burns have received local applications of sulfathiazole ointment. The lesions in each of the patients have healed with rapid and uniform epithelization and without infection.

SUMMARY AND CONCLUSIONS

A 5 per cent sulfathiazole ointment was prepared by suspending finely powdered sulfathiazole, which had been sifted also through bolting cloth to remove large crystals, into equal parts of hydrous wool fat and vanishing cream.

Sulfathiazole ointment was used in the treatment of 69 patients with various cutaneous infections. It appeared to be efficacious in the treatment of infected infantile and adult eczema, seborrheic dermatitis, impetigo, acne vulgaris, bacterial folliculitis and furunculosis.

No toxic effects were observed. In 6 of the 8 infants that received applications over one half of the body surface three times a day the concentration of sulfathiazole in the blood ranged from 2.0 to 3.5 mg. per hundred cubic centimeters. The children and adults that received applications of sulfathiazole ointment over localized areas of the body did not absorb sufficient sulfathiazole to produce a detectable quantity in the blood, although the ointment was applied at frequent intervals throughout the day for prolonged periods.

A number of the children with infantile eczema became reinfected when a 5 per cent carbonis detergens ointment was substituted for the sulfathiazole ointment. Sulfathiazole was then incorporated in the carbonis detergens ointment, with definite and persistent improvement in the eczema and in the infection.

Thirty-five patients with acute vesicular poison ivy dermatitis, 33 patients with cuts and 4 patients with small second degree burns received local applications of sulfathiazole ointment. The lesions in each patient healed without infection.

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FIRST AID TEACHING TECHNIC

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Present day warfare, with participation by the entire population in the defense and offense effort, necessitates training of the whole population, each segment for its duties. Into the public mind today the need for preparation is being instilled, and much thought is being given to devising the direction and method of training. If the whole population is to be trained for the emergencies of war, one of the first objectives will be the training in methods of first aid. In Britain such training has formed an important aspect of defense work. In this country the American Red Cross is even now extending its first aid program; plans call for an immense expansion of this training.

Without doubt, physicians will play an important part in the local programs. Red Cross units commonly have physicians among their directors and look to them for guidance in phases of activity related to health work. Whether he has a hand in directing the local program or whether he actually does the teaching, the physician may find himself in a role which he does not ordinarily have, that of participating in classroom teaching. Because of his long experience as a student, as a teacher of the individual patient and perhaps as a public speaker, he will have many qualifications valuable for classroom teaching. Nevertheless such teaching is a specialized procedure, requiring study and practice for mastery, and the physician who is equipped with and applies knowledge of good educational methods should represent the best first aid teacher.

It is possible that some of the training of the physician may condition him unfavorably for certain aspects of first aid teaching. Because of his own experiences, he may rate the pupils too high on the basis of background information and ability to understand explanations and to memorize. Even when warned and wary of dangers, mistakes may occur. In one class, after the topic of broken bones had been considered, one pupil asked "Now that we have studied about first aid for broken bones, won't you tell us how to take care of fractures?" This pupil was a college student! On another occasion a pupil asked "Will digital pressure, applied to the right arm, stop bleeding in the left arm?"

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The right arm had been used in the class demonstration. Just as the first aider should "splint 'em where they lie," so the instructor must "know the pupils." The beginning instructor almost invariably overrates the pupils as students.

The approach to becoming a good local adviser or teacher in this program entails (1) acquisition of organized knowledge relating to accident prevention, (2) acquisition of knowledge concerning good first aid procedure, (3) acquisition of knowledge concerning what the public is being taught generally in first aid classes and (4) acquisition of knowledge concerning methods in first aid teaching. Usually first aid courses consider accidents common to civilian life, using the American Red Cross First Aid Textbook. It may be that soon instructors will be provided with additional material based on the experiences in Europe and that thus the course may include topics pertaining especially to prevention and first aid care of disabilities common to warfare. The Red Cross textbook, written with the collaboration of medical men eminent in their respective fields, is exceptionally good. It gives in simple language information concerning accident prevention and first aid procedures. It is not written primarily as a textbook for physicians but rather for lay people. It considers cognitive levels and assimilative abilities of these people.

The Red Cross also issues an instructor's manual. This book is based on the large body of experience of the national organization in first aid procedures and teaching. It allocates the ground to be covered in each lecture, gives lesson plans and suggestions for class management and lists mistakes commonly made by the novice instructor.

During recent years, many lay persons having been trained in first aid, it has been possible to study the effects of first aid teaching, to ascertain whether accidents are reduced, whether graduates do good first aid work and what is the nature of the mistakes made by graduates in their first aid efforts. Conclusions can thus be drawn concerning the improvement of first aid courses.

Many studies show beyond reasonable doubt that first aid training represents an effective way to reduce accidents. Accident prevention is a major objective of first aid training; it is not a will-o'-the-wisp objective but rather one which the instructor may with confidence expect to attain. The trained first aider also handles accidents better than does the nontrained person. Physicians may smile occasionally at the work of first aiders, but by and large the trained person does good work when compared with that of the untrained. And course graduates also commonly have an improved attitude concerning matters of general health.

While the trained lay person does improved work, mistakes are occasionally made. Such mistakes include the following:

1. He is overwhelmed by the scene of the accident, modifying learned methods to the detriment of the victim's interests.
2. He fails to examine carefully.
3. When the victim has several injuries, the first aider pays attention only to the worst one.
4. He uses splints that are too short.
5. He gambles that the injury is a sprain rather than a fracture.
6. He is too free with the application of a tourniquet.
7. He handles burns poorly.
8. He applies artificial respiration when he should not do so.
9. He does not organize his first aid efforts efficiently and thus copes poorly with shock.

These mistakes suggest three avenues toward improvement of first aid teaching: better preparation of the pupils concerning general difficulties faced at the scene of an accident; presentation in succinct form of essentials for care of each accident type, with emphasis thereon rather than on details; provision in the home and automobile of splints and bandage material of adequate size for coping with major accidents.

In preparing the first aid course, it is necessary to plan for the entire course rather than for the isolated lecture. The subject matter we want to teach must be specifically defined; then such subject matter objectives must be weighed against the pupils' abilities to learn in the allotted time. One cannot teach nearly everything one may want to teach; the subject matter must be ruthlessly slashed perhaps, for only the most important can be considered. But the total usable learning is increased through the indelible imprinting of the essential. These most important facets should be presented in brief form with crystal clarity; they should be emphasized again and again. Before a class, the instructor should have in mind the things he expects to emphasize specifically; thus "Today I will clinch the idea that accident victims must be carefully examined," or "Today, in considering first aid for concussion, I am going to drive home the idea that victims must be kept quiet." The instructor will keep to his outline and to his sequence and not be diverted into a morass of side aspects. The physician knows so much, he has had so many interesting experiences, that it becomes easy for him to overflow the banks of the essentials. Eliminating consideration of aspects fairly but not essentially important is like pulling teeth; but it must be done often in first aid teaching for the lay public if the heart of the topic is to be presented emphatically.

In preparing the pupils for the scene of the accident it is important that they visualize the difficulties and common mistakes of the first aider. The lecture which treats of this topic and imparts general rules applicable in any accident is no doubt the most important one in the entire course.

To appreciate the difficulty of preparing an effective lecture on this topic, one which will in the dim future result in a good first aid job, one need only reflect on the teaching task. Ordinarily the students in the course are not conditioned to sweat in study. They expect the facts to come in gently. Yet it is the teacher's responsibility to face the teaching situation. The course is usually of only twenty hours, and there is much ground to be covered. Much of the time must be spent in doing first aid practice procedures, so that only part of the time can be devoted to lectures. Yet, despite possible deficiencies of the pupil in ability, motivation and time, this pupil must remember—if the teaching is to be effective—material for an accident which may not occur for many years. There are many kinds of accidents, but the student must remember what to do for the one which, unheralded, occurs. Meanwhile he has seldom had time for review.

Then, when the accident occurs, this pupil is in a new situation, a dramatic one perhaps. He does not have an opportunity at this time to sit down and cogitate about the whole matter in peace and quiet. He may be deluged by the enormity of the harm, by the presence

of death, by the onlookers, hysterical relatives, injured victims, importunate bystanders. Necessary apparatus, prepared or improvised, may be difficult to obtain. Zero weather, heavy rainfall or concomitant traffic may in effect represent forces which nullify all the teaching. And so he may regard the accident he meets as different from any studied or, while knowing what is correct procedure, surrender to the exigencies of the occasion and give poor first aid.

Attention may then well be directed at the following:

1. Every accident seems different, unique. The general rules should be followed unless one is positive that modification is indicated. The student who knows the common mistakes of the first aider is fortified against making them himself.

2. A careful examination is very important. The first aider is strongly tempted to give only a superficial examination, to hurry through it. A good examination requires deliberation, time, tact.

3. In the presence of serious injuries, other injuries should be searched for and, if present, treated with care.

4. There is tremendous pressure, at the time of a serious accident, that something be done. Doing nothing other than keeping the victim quiet and warm for the time being is often the indicated procedure, but such action is most difficult. The victim and the onlookers interpret this deliberation as a sign that the first aider does not know what to do. Physicians, police and firemen in first aid work subscribe to the statement that this great importunity exists at the scene of the accident.

5. Advice from bystanders is often confusing, occasionally commanding. The first aider, recalling only tenuously what is right, may easily be swayed by others.

6. The drunken are usually hard to handle when injured; they are especially likely to be hysterical, often claim to be hurt far worse than they really are. Yet drunkards are often involved in accidents, may be seriously injured; hence the first aider can take no chances and must be persistent in his examination. Some people seem to feel that a drunkard has forfeited the right to receive good first aid.

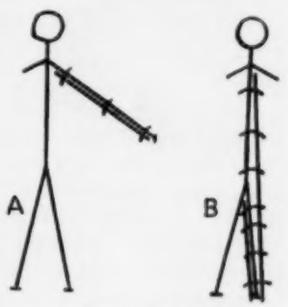
7. Very often it is wise to call a physician to the accident scene. Permission of the victim or of a responsible person should first be secured, if possible. In all serious accidents, the first aider should consider carefully this possibility of getting a physician to the scene of the accident.

Students occasionally do not learn clearly some of the first aid procedures. In the flood of details presented to them, they do not see the principles of care. The instructor should think of (1) imparting the facts and (2) having the students bring the facts back to him. Thus they learn better, for they must do the stating and must participate; they secure repetition through the process and learn of their own deficiencies. The instructor learns of their misconceptions and finds where his teaching has fallen short. The Red Cross textbook has more than 250 pages; the material in it will not be uniformly well remembered through the years. If the teacher considers carefully every paragraph, he will not gain emphasis; he will fail to impress the essentials indelibly. It is easy to get far too much detail, to lose perspective view. The teaching should conform to the practical situation and the teacher bear in mind the weighting of topics and be guided by subject matter, pupils, objectives.

Let us take the case of fracture care. There are more than two hundred bones in the body. One cannot reasonably expect that students will remember through the years the ideal splint for each type of fracture considered in the textbook. Yet teachers occasionally spend time to no real purpose on requiring the memorization of such terms as femur, humerus and vertebra. The student should understand thoroughly the idea in splinting: to keep the broken ends quiet. He should understand thoroughly the treatment of shock and the factors that increase shock. For emphasis the following suggestions may be stressed:

1. Don't let the broken ends move.
2. Treat shock.
3. Treat every possible fracture as a fracture.

A general rule for splinting is that the splints should extend well beyond the joints adjacent to the fracture. For purposes of lay education, one may state that by and large a splint can hardly be too long except it becomes unwieldy. A heavy splint, poorly attached, may contribute more to shock than a light one so placed. Students should have considerable practice in applying splints so that they learn to organize, prepare and expedite their efforts and to apply them well. They must learn how to transport a victim a few feet, if such is necessary in order, for instance, to escape traffic. They must get practical help concerning improvisions. Too often recommendations are impractical to the scene of the accident. The first aider may find that raw material for improvisions may not be as easy to find as he had thought, for he may encounter his accident in heavy rainfall, darkness or bitterly cold weather. Under these circumstances, if he spends time looking for fallen boughs, fence posts, or random boards, the victim may sink into deep shock. It is exceedingly important that the teaching recommendations foresee the practical situation.



A, fracture of elbow with arm straight; *B*, fracture of femur without traction.

I have used the accompanying diagrams in summarizing where splints should be placed and I ask students to repeat the drawings after they study the textbook.

The students are commonly surprised that the learning on this aspect becomes easy through the method used. Concerning back injuries, the students should know the implications of spinal cord injury; they should know of the insidiousness, as far as history, symptoms and signs are concerned, of this type of injury. Certainly first aid for fractures of the neck should be rendered by a physician called to the scene of the accident.

Head injuries and cerebral circulatory accidents are often encountered. Almost 50 per cent of fatal traffic accidents show concussion as the cause of death, according to National Safety Council reports. Whether concussion or stroke, the victim should be kept quiet. The care may be outlined as follows:

1. Keep the victim quiet.
2. Elevate his head somewhat if the face is red; keep it level if the face is pale.
3. Give the victim no stimulants.
4. Apply an ice cap, if available, to the head.

It is important to consider drunkenness in connection with head injuries. Often the drunkard is the victim of an accident and the injury is dismissed. The textbook discussion on this point is good.

Criticism has repeatedly been directed against various aspects of teaching on the topic of artificial respiration. Many misconceptions concerning theory are held. Henderson and Turner, in a recent issue of THE JOURNAL,[1] consider physiology and methods, their article being based on much research work. This article should be read by all first aid instructors. Many instructors insist on meticulous observation of minor points in administering artificial respiration. Clearly, the following points should be emphasized:

1. Get started at once.
2. Compress the chest and release twelve to fifteen times a minute.
3. Treat shock.
4. Keep the victim quiet after he starts breathing.

The student should know of the precious time interval between cessation of breathing and cessation of heart action. He should therefore know of the great need for starting artificial respiration at once. Though the prone pressure method is used ordinarily, it is occasionally impossible to straddle the victim. The student should understand the idea so that he will start artificial respiration in a boat or wherever he finds the victim.

The student should know when the method is useful. Occasionally instructors state that the procedure should be followed any time a victim is not breathing. Hence first aiders are giving artificial respiration to victims of stroke, of concussion and even of infectious disease. The argument favoring such teaching is as follows: If a victim is not breathing, artificial respiration cannot be harmful, though it may be useless. One cannot expect the average person to remember a series of indications for its use; but if this person is taught to use the method any time a victim is not breathing, he will remember such a simple rule well.

The argument fails to consider the commonest mistake of the first aider. In his excitement he administers the prone pressure method to victims who are unconscious but breathing. Such cases often represent stroke, concussion or injury to the visceral system. The procedure of artificial respiration here may represent the finishing coup; it is definitely dangerous. During the past year I have seen 2 cases in which prone pressure method was being used on victims of stroke. These injuries are very common, and if the first aider gives artificial respiration to every victim of stroke or concussion he sees he may be responsible for more dire results than the good which follows use of the method wisely. Hence students must learn when artificial respiration is to be used.

The technic of the prone pressure method requires practice for good administration. The beginning instructor should be coached in the technic by an experienced operator. Otherwise, while he may get a good exchange of air, he may fail as a teacher in being awkward or singularly atypical in method.

In consideration of shock, the important thing is the prevention and the treatment. One may require the students to memorize thoroughly the symptoms and signs. Time devoted to one facet is obtained at the expense of time devoted elsewhere. Aside from modification of treatment with certain injuries, such as concussion and heat stroke, all accident victims should be treated through (1) heat, (2) position, (3) stimulants. The revised edition of the Red Cross textbook presents in improved fashion the first aid handling of burns. Perhaps one may look forward to better work on the part of graduates of the course in this type of accident.

The preceding paragraphs indicate the method of analyzing the subject matter in order to emphasize the heart of the topic, in order to gain emphasis. The main points should be clinched.

In order to apply methods learned, the first aider must have materials at the scene of the accident. Observation shows that in a proportion of cases graduates do not improvise material. The difficulties, they feel, are overbalanced by other factors. First aid kits provide a partial answer, but they are inadequate when the accident is a major one. They ought to be in each home and each automobile. But there should also be available in each automobile a few splints, at least six large triangular bandages, a flashlight and a jack knife. These can readily be provided and carried; certainly they can be provided more easily before than at the accident. If they are present, they will likely be used. If not present, the likelihood of transfer of the patient without splinting is greater. A film, sponsored by many medical societies and dealing with fracture care, has been widely shown to the public. This film demonstrates only the Thomas splint. But how often is the Thomas splint available at the scene of the accident? The real situation has again not been visualized. How may the situation be remedied? The answer is very simple: Have the pupils while enrolled in the course prepare the material for their own cars and homes. They can cut notches in the splints in such manner that traction splinting is possible. By teaching first aid, the teacher acknowledges its importance; he therefore is consistent when he insures application through providing necessary materials.

After the text work has been completed, a valuable teaching technic is to present hypothetic accident situations to the class, letting it work out procedures on designated victims. The pupils thus learn well the difficulties and factors to consider and also to organize their efforts. Even medical students, segregated into groups of two or three, find difficulty in planning first aid procedures for such a simple matter as splinting an ankle.

Films ought to represent an exceptionally valuable teaching aid. From them students might visualize well the scene of the accident, the discouraging aspects for good first aid, the difficulty of going ahead in a planned way and the common mistakes made. Unfortunately, available films omit particularly the aspects one would like to see. Sometimes significant omissions occur. Thus a film which suggests use of iodine on cuts ought to present some cautions when the lay public is being taught. Surgeons, when previewing films, commonly raise valid objections. However, better films will doubtless be prepared. The makers should have knowledge of the actual accident situation and experience in teaching first aid.

1. Henderson, Yandell, and Turner, J. McCullough: Artificial Respiration and Inhalation: The Principle Determining the Efficiency of Various Methods, J. A. M. A. **116**: 1508 (April 5) 1941.

PERORAL USE OF METHYL TESTOSTERONE

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Testosterone and its derivatives have been in clinical use for the past four years, during which time their value in the treatment of testicular deficiency has become firmly established. The dramatic effects produced in eunuchs and eunuchoid patients have been reported by numerous investigators.[1] It is now recognized that these synthetic hormones have little effect in the presence of adequate testicular function and they are of value only as substitutive therapy for patients whose testicles are secreting an insufficient amount of hormone.[2] The etiology of the testicular deficiency may be one of many; viz., lack of proper pituitary function, inherent underdevelopment of the testicle, surgical and traumatic injuries to the testicle or its blood supply, and senility. The symptoms and physical characteristics of testicular deficiency have been fully described in previous publications.

The method of administration of these valuable hormones has been a major problem. Early studies revealed that pure testosterone had little clinical effect when injected subcutaneously. It was soon found that esterification[3] increased its effect; this is probably due to the decreased rate of absorption and excretion. Most of the clinical reports have been based on the use of the propionic acid ester of testosterone (Perandren, and so on). This substance is dissolved in an inert oil and injected subcutaneously or intramuscularly. The optimal development and maintenance dosage in treatment of patients with hypogonadism has been determined by Howard and one of us.[4] They found that 25 mg. injected two to three times a week produced the desired objective and subjective effects. The same authors later showed that these hormones could be administered in the form of hard pellets implanted subcutaneously.[5] Such administration was more efficient and resulted in less waste of hormone. In these experiments the absorption of an average of 3 to 5 mg. a day produced the same effects as larger amounts given by subcutaneous injection. However, neither subcutaneous injection nor implanatation in the form of pellets is an ideal method. Patients should not inject themselves with oily solutions, and treatment thus necessitates a visit to the physician's office several times a week. The subcutaneous implantation in pellet form eliminates the frequent injections, but sterile pellets are difficult to prepare. Testosterone and its derivatives have been incorporated in bland ointments and alcoholic sprays, but these methods are not as satisfactory as subcutaneous injection.[6] Scott[7] reported effective results in rats treated with inunctions of testosterone, testosterone propionate and methyl testosterone.

Peroral administration of testosterone and its various esters has been used in both animals and human beings; but the effectiveness is comparatively low and of little clinical value. Dorfman and Hamilton[8] gave large amounts of testosterone by mouth and found the clinical response negligible even though there was a great increase in urinary androgen excretion. Miescher and Tschopp[9] in their comprehensive study of various testosterone derivatives noted that the introduction of a methyl radical greatly enhanced the peroral effect in rats. Their results showed a 340 per cent greater increase in the weight of the prostate after the ingestion of methyl testosterone over that obtained after the ingestion of pure testosterone. Emmens and Parkes[10] in their study of the effects of male sex hormones on castrate rats observed that the peroral activity of testosterone is only one tenth as great as the activity when injected subcutaneously. In the case of methyl testosterone the peroral activity is four tenths as great as when injected subcutaneously.

These encouraging experimental results of peroral administration led one of us (S. A. V.) to use methyl testosterone clinically. Early in 1939 a 14 year old boy who showed no evidence of puberty was given 30 mg. of methyl testosterone daily for several weeks. During this period the pubic hair started to grow and the penis increased considerably in size. Erections became frequent. The prostate soon became palpable and quickly reached normal size. Prostatic secretion, which was normal on microscopic examination, could be expressed. These changes, although sudden, were quite consistent with the normal onset of puberty and thus the biologic effects of methyl testosterone in human beings were not deemed conclusive at that time. In order to observe possible toxic effects it was decided to give this substance to a series of normal men before further trials on patients with testicular deficiency. Twelve men varying in age from young manhood to senility were given methyl testosterone perorally for periods of several weeks. The dose ranged from 25 to 50 mg. a day. No stimulation of sexual function was noted and no changes in the genitalia were observed. The only symptoms of toxicity which developed were diarrhea for several days in 1 patient and headache in another. These symptoms, however, soon disappeared without withdrawal of the drug.

From the Department of Urology, University of Virginia Hospital.

The methyl testosterone (Metandren) used in this study was supplied by Dr. Ernst Oppenheimer of the Ciba Pharmaceutical Products, Inc., of Summit, N. J.

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Foss [11] later in 1939 reported the effect of this hormone on an adult eunuch and found that sexual potency could be fully maintained. McCullagh [12] described his experience with the peroral use of methyl testosterone in testicular deficiency but presented only 1 case in detail. He found that if the drug was given in three to four times the necessary amount of testosterone propionate by injection it seemed to duplicate the effects of the latter. In a few instances he gave as much as 150 mg. a day without the appearance of any symptoms of toxicity. Spence [13] reported satisfactory results with peroral methyl testosterone in the treatment of a 20 year old surgical castrate. Kearns [14] has reported similar results following the use of peroral methyl testosterone. An interesting report by Duffy and Corsaro [15] reveals the fact that methyl testosterone by mouth has been successfully used in suppression of lactation in women.

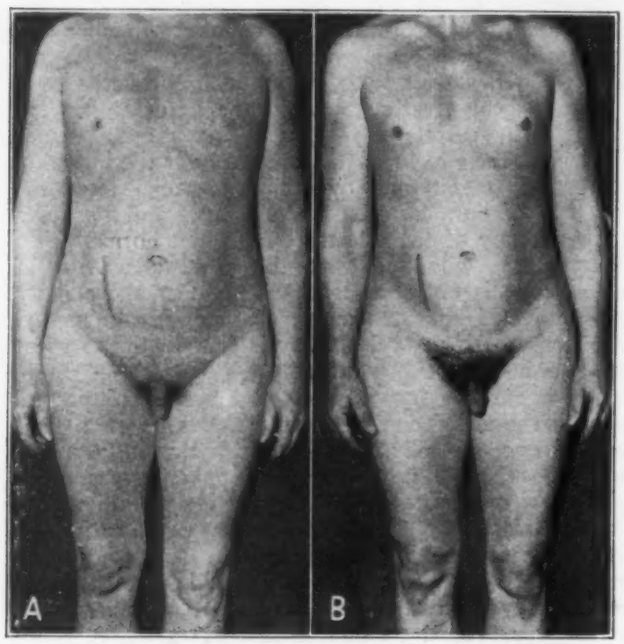

Fig. 1 (case 1).—Appearance (*A*) at beginning of treatment and (*B*) at end of first eight months of treatment with daily peroral methyl testosterone.

We have been able to observe the effects of methyl testosterone by mouth on 2 patients who have received this hormone steadily for twenty and seventeen months respectively, which is a sufficient length of time to justify a clinical report:

CASE 1.—*History.*—J. J. J., a man aged 48, a teacher, was first seen on Jan. 4, 1940 complaining of increasing "fatigue" and lack of "drive." At the age of 17 his testicles were removed, but by what means or for what purpose the patient refused to divulge. At this time he had not quite reached full sexual or physical development. He believed that puberty was late in appearing because the penis had not fully developed, there had been no remarkable change in voice, and the pubic hair was just beginning to grow. Before castration he had experienced some sexual desire and had had erections. He masturbated about once a week. Following castration there was a loss of sexual desire and discontinuance of masturbation. There was no further growth of the penis or pubic hair. There were no headaches, hot flushes or breast changes noted. While at college he began to notice lack of endurance and increasing fatigue. An animal gland was transplanted to his abdominal skin but was not effective. Nevertheless he did unusually well in his studies and eventually rose to become head of his department and teach numerous subjects. As a youth he was thin and undernourished and weighed 110 pounds (50 Kg.). During the last decade his weight had increased to 156 pounds (71 Kg.). He had been married for eight years and had intercourse about once a month. He stated that there was very little sexual desire, but coitus was terminated with a climax which was not particularly enjoyable. He did not ejaculate, although he believed a tiny amount of sticky material appeared at the meatus. His sole desire for treatment was based on increasing fatigue and lack of drive. Because of this, he felt that he could no longer carry on with his burdensome teaching. The sexual aspect of his condition presented no problem to him or to his wife and he felt that he would resent any stimulation of his sexual life. Because of his moral convictions he almost refused any treatment, as it would necessarily produce sexual stimulation.

Physical Examination.—The patient was stocky and well nourished (fig. 1 *A*). His skin and facial appearance were typical of a eunuch. There was a very moderate amount of black hair in the axillary and pubic regions. The legs, forearms and abdomen were devoid of hair. No beard was visible, but a slight roughness could be felt on palpating the chin. The general bodily configuration was not eunuchoid (castration had taken place after skeletal maturity). The breasts were fat and rather prominent, but there was no palpable breast tissue. The scrotum was atrophic and the testes were absent. The penis was small and underdeveloped. It measured 2.5 cm. in diameter in the midshaft and 9.2 cm. in length when fully extended. The prostate and seminal vesicles, surprisingly enough, were palpable and were estimated to be about one-fourth normal size. After vigorous palpation, one tiny drop of clear secretion was obtained. This contained an occasional epithelial and white blood cell.

Treatment and Result.—Beginning on Jan. 4, 1940 the patient was given 100 mg. of methyl testosterone [16] daily. The penis was engorged or erect most of the day while he carried on his classroom work; at night he had a constant complete erection. There was a sensation of irritation throughout the genitalia. It was necessary for him to have daily coitus or masturbation to afford relief. This relieved him for only about two hours, following which he would again become aggravated. After three days the dosage was reduced from 100 to 60 mg. Even on this amount there was so much sexual irritation that it was necessary to reduce the dosage further to 20 mg. or sometimes discontinue all medication for one day. By the last of January he was able to take 40 mg. a day. He noticed considerable increase in physical strength and endurance almost from the beginning of treatment. He was delighted with the increase of "mental vigor" and felt that this greatly offset the undesirable sexual stimulation. He had experienced cardiac irregularity at times for many years, but this was distinctly more frequent following treatment. During the first week of treatment there was slight headache and an increase in bowel movements, but these soon disappeared. At the end of the first three weeks his voice became more resonant and he could no longer sing high notes in the choir. During this time he gained 12 pounds (5.4 Kg.).

Throughout the next twelve months various dosages were tried. As much as 40 to 50 mg. a day produced an overstimulation of sexual desire and he had difficulty controlling erections while lecturing to his class. The presence of girl students in his classes excited him. For the greater part of the year the dosage was stabilized at 20 to 30 mg. a day. This still produced a satisfactory amount of bodily vigor. His

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16. Metandren.

mental vigor was stimulated and he was able to increase his teaching activities. He felt that he was enabled to work much harder because of this hormone.

In the past year the following changes have taken place: The penis has increased in length from 9.2 cm. to 13.2 cm. fully extended. This increase in size and length of the penis occurred during the first seven months. Since that time increase in length has been slight. Figure 1 *B* shows the patient eight months after beginning treatment. The prostate and seminal vesicles have enlarged until they are entirely within the normal limits of size and consistency. Normal secretion can be expressed. A considerable number of dark hairs up to 1 cm. long have appeared over his abdomen and to some extent over the lower legs. The pubic hair has slowly developed. There is a definite stubble over his chin and upper lip, so that he has to shave every day, whereas at the beginning of treatment he rarely shaved. Acne appeared on his face soon after beginning treatment and has been present since that time. His voice has continued to be more resonant and of a considerably lower pitch. His breasts were tender for about the first eight months after beginning treatment. There has been no palpable enlargement and no further tenderness. His weight has remained at 163 pounds (74 Kg.). He says his urine has a stronger odor and that he salivates and sweats considerably more than before beginning treatment. He is not disturbed with erections during his classes provided he takes no more than 20 mg. a day. Even on this amount he usually awakens with an erection in the morning. When he takes as much as 40 to 50 mg. a day the erections become annoying. He now has coitus two to three times a week and is rapidly changing his attitude toward this function. He no longer abhors the sexual act as he did before and states that it is definitely becoming somewhat enjoyable to him and his wife. He was greatly frightened over the prospect of not being able to obtain this hormone and says that it has opened up such a new life to him that he could no longer subsist without it.

CASE 2.—*History.*—A. S., a white man aged 39 (fig. 2 *A*), seen on Feb. 14, 1940, stated that he failed to experience the usual changes at puberty. His voice did not change and he developed little pubic hair. His penis remained infantile and the testes did not develop. At the age of 21 he took "some pills" prescribed by his local physician for his genital underdevelopment, but there was little improvement.

In 1930 he married and was able to have coitus once a week. During coitus there was a complete erection followed by a climax without any ejaculation. He had never masturbated in his life but had experienced a rare sexual dream without ejaculation. For the three months before he presented himself he had lost all sexual desire because of pain in his abdomen. A gastroenterostomy had been done some years before for ulcer of the stomach, and symptoms of the ulcer had recurred.

Examination.—The patient was tall, thin and considerably undernourished (fig. 2 *A*). He presented the physical characteristics of eunuchoidism. The extremities were unusually long. The skin of his face had a distinct progeric aspect. It was of fine texture, thin and pale. His voice was high pitched. No beard was present. Moderate hair was present in the axillas. There was no hair on the chest, abdomen or legs. A little pale suprapubic hair, fine in texture, was visible. The breasts were not palpable. The penis was small and measured 9 cm. when fully extended. The right testicle was fully descended and normal in consistency and contour. It measured only 4 by 2.5 cm., however. The left testis was about one-half the size of the right and was situated in the upper portion of the scrotum. The prostate and seminal vesicles were not palpable.

Further studies revealed that the patient had a carcinoma of the stomach and on Feb. 29, 1940 Dr. Bruce Morton removed his entire stomach and anastomosed the esophagus to the jejunum. Convalescence was uneventful.

Treatment and Result.—On April 2 the patient was started on 50 mg. of methyl testosterone a day. This was continued for five months, following which he took 30 mg. a day for three weeks. The dose has been further reduced to 20 mg. a day since that time. He has absorbed the methyl testosterone in spite of the absence of his stomach, as evidenced by the following changes. Within the first week after treatment was begun, spontaneous erections began to appear. They occurred at least a dozen times a day, and he noted particularly that if he lay down there would be an immediate erection. The penis was engorged most of the time. Sexual desire was noticeably increased. Coitus was performed on an average of five to six times weekly. The patient stated that he was capable of having coitus several times a day, but his wife was not desirous of this and therefore he soon restricted intercourse to three times a week. For the first time in his life he experienced the sensation of the ejaculation of fluid. He estimated the volume to be about 1 teaspoon. During the first month he

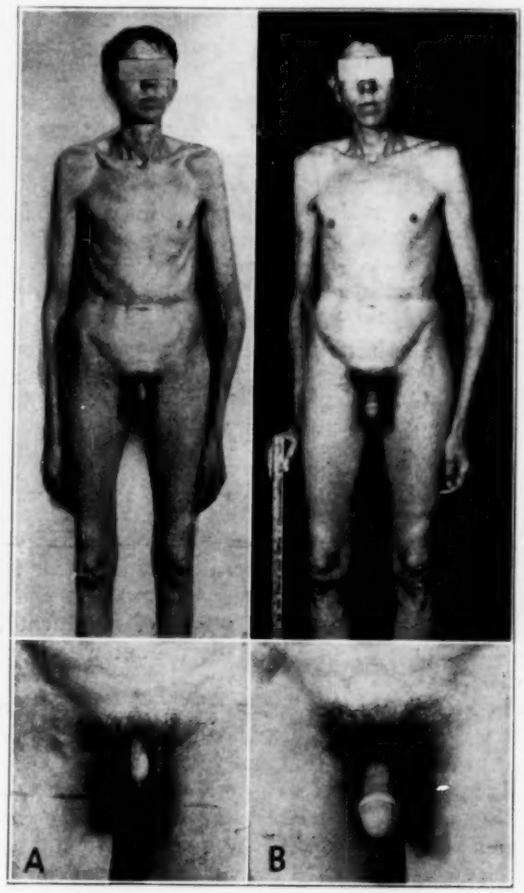

Fig. 2 (case 2).—Appearance (*A*) at beginning of treatment and (*B*) at end of eight months of treatment with daily peroral methyl testosterone.

had two seminal emissions. The nipples of his breasts became reddened and enlarged, but no breast tissue was palpable. He gained 15 pounds (6.8 Kg.) during the first month. At the end of three weeks' treatment there was a sudden appearance of acne on his face for the first time in his life, and this has persisted to date. His skin began to tan when exposed to the sun; this had never occurred before. His penis gradually enlarged and at the end of the first year it had reached 13 cm. in length when fully extended. The glans penis measured 3.7 cm. wide and the midshaft diameter was 3.3 cm. Figure 2 *B* shows the change in appearance eight months after treatment was begun. The prostate grew rapidly during the first five months of treatment until it was entirely normal in size, shape, contour and consistency. No change occurred in the voice until after several months of treatment, when it became deeper. Since treatment with methyl testosterone was begun there has been a decided increase in his general strength, but because of the removal of the gastric carcinoma we have hesitated to attribute this entirely to the drug. Dark hair has appeared over

the lower legs and forearms and there has been considerable increase in pubic hair (fig. 2 *B*). During the past year his weight has remained the same and he has maintained the 15 pound gain which was made in the first month. No toxic symptoms whatever appeared. His wife left him several months ago, and he believes this was precipitated by the greatly increased demand for coitus on his part.

COMMENT

The results in these 2 cases are quite in accord with the several other reports which have recently appeared.[17] We consider it noteworthy that our patients received treatment for twenty and one-half and seventeen and one-half months respectively. Such prolonged treatment affords more information as to the efficacy of the peroral route of administering methyl testosterone. In these 2 cases, 1 of eunuchism and the other a typical example of eunuchoidism, methyl testosterone by mouth has reproduced effects comparable to those in other cases following percutaneous administration, subcutaneous injection and pellet implantation of testosterone and its esters. There occurred considerable growth of the internal and external genitalia with great increase in sexual potentia. There was definite improvement in general strength and mental vigor. Characteristic changes involving the hair, skin, breasts and voice occurred.

We have administered methyl testosterone over short and long periods of time. Patient 1 received a total of 21,750 mg. over a period of twenty and one-half months. In the beginning it was felt that the presence of the methyl group might have altered the biologic characteristics of testosterone, and it was therefore of particular importance to study carefully all possible toxic reactions. The only evidences of toxicity were headache, diarrhea and accentuation of a cardiac irregularity in 1 case. These were all mild in character, of short duration (first two weeks of treatment), and they spontaneously disappeared without withdrawal of the drug.

When treatment was begun it was necessary to determine the optimal maintenance dosage. At first we prescribed amounts ranging from 50 to 100 mg. a day but found that these quantities produced sexual overstimulation. By trial and error methods we became convinced that 20 to 30 mg. a day gave the desired subjective and objective effects and that greater doses led to waste of hormone and excessive libido and potentia. Doses in the lower magnitude (140 to 210 mg. a week) resulted in changes in eunuchoid patients identical with those produced by 25 mg. of subcutaneous testosterone propionate twice a week (50 mg. a week). The optimal maintenance dose of peroral methyl testosterone a week is evidently three to four times that of testosterone propionate by injection. The ease of administration of the former more than compensates for the large quantity of hormone needed. A factor which tends to offset the cost of a greater amount of this drug is the reduction in the number of necessary visits to the physician's office.

The mode of action of methyl testosterone has not been conclusively explained. Testosterone, its esters and its methyl derivative have been found to be effective to various degrees in both human beings and animals whether administered subcutaneously, by inunction or by subcutaneous pellet implantation.[18] Biskind and various collaborators have shown that these hormones are inactivated by the liver when absorbed through the portal circulation.[19] It is of unusual interest that of all these compounds methyl testosterone is the only one which is appreciably active when given by mouth. Miescher and Tschopp [9] believe that the methyl group in the 17 position probably protects the hydroxyl group from hydrolysis by intestinal ferments and thus the molecule is absorbed unchanged. Biskind [20] has suggested that the greater activity of peroral methyl testosterone may be due to the fact that it is absorbed from the intestinal tract via the lymphatics, thus reaching the general circulation without passage through the liver. In connection with absorption, it is of interest that patient 2 shows that the presence of the stomach is not necessary for assimilation and utilization of the hormone.

There has been speculation whether the activity in the body is due to methyl testosterone, its testosterone base or a further metabolite. One of us (S. A. V.), however, observed no qualitative differences in the genitalia of male monkeys receiving testosterone and its methyl derivative.[21] It has been observed by Klein and Parkes [22] that methyl testosterone exerts a more pronounced progestational effect on the rabbit uterus than testosterone. This possibly intimates that the activity may be due to methyl testosterone and not to the testosterone itself.

SUMMARY

1. Two patients, 1 a 48 year old castrate, the other a 39 year old eunuchoid, received peroral methyl testosterone for twenty and one-half and seventeen and one-half months, respectively.

2. Methyl testosterone administered by mouth was found to be effective. It produced changes in the genitalia and other sexual attributes comparable to those following subcutaneous administration of testosterone propionate.

3. The previous removal of the stomach of 1 patient did not affect the results.

4. The optimal dosage in complete or decided testicular deficiency was found to be 20 to 30 mg. daily. This is three to four times the amount of testosterone propionate necessary for proportional effects. The convenience of administration and the reduction of necessary office visits compensate greatly for the larger amount of hormone required.

5. Toxic effects in the 2 patients who received prolonged administration and in 12 other patients treated over shorter periods of time were negligible. In 1 of the 2 cases reported here an amount was administered in excess of 21,750 mg. over a period of twenty and one-half months.

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18. Biskind, G. R., and Meyer, M. A.: The Comparative Androgenic Potency of Testosterone, Methyl Testosterone, and Testosterone Propionate Administered in Pellet Form, Endocrinology **28:** 217-221 (Feb.) 1941. Emmens and Parkes.[10]

19. Biskind, G. R., and Mark, Jerome: The Inactivation of Testosterone Propionate and Estrone in Rats, Bull. Johns Hopkins Hosp. **65:** 212-217 (Aug.) 1939. Biskind.[20]

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21. Vest, S. A.; Drew, J. E., and Langworthy, O. R.: Implantation of Cystalline Testosterone in Monkeys, Endocrinology **27:** 455-460 (Sept.) 1940; Some Comparative Effects of Testosterone Derivatives in the Monkey, ibid. **28:** 257-262 (Feb.) 1941.

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STREPTOCOCCI IN AIR AS AN INDICATOR OF NASOPHARYNGEAL CONTAMINATION

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With the introduction of the Wells Air Centrifuge,[1] a renewed interest has developed in the bacteriologic examination of air, particularly in reference to its streptococcic content under various environmental conditions. The studies, including some on schools, theaters, subways, railway cars, textile factories and hospitals, have been conducted largely in New York, Boston and Iowa City.[2] Our investigations, carried out in a department store [3] which is the largest and perhaps at times the most crowded in the world, constitute an attempt to correlate the density of crowds with the degree of bacterial pollution of the air, in relation not only to total bacterial counts but especially to the numbers of streptococci of nasopharyngeal origin, to determine seasonal variations in respect to such data and to plot the prevalence rate for disabling colds among the employees in relation to the numbers of streptococci in the air during the course of a year.

The total number of employees in this store ranges from 11,000 to more than 20,000 during the holiday season. In the medical department a record is kept of the number of disabling colds involving at least one day's absence among these employees. The monthly average incidence was taken as an approximate index of the prevalence of colds among the customers of the store, and on this basis was assayed the validity of the suggestion of Wells [4] that the prevalence of alpha streptococci in the air may serve as an index of the pollution of air by cough spray, as that of Escherichia coli serves in reference to the pollution of water by sewage.

The building is ventilated by mechanical methods. All fresh air inlets for the upper floors are located on the roof of the tenth floor. The air is conditioned for the basement and for the main, first, second, third and fourth floors only, with five changes per hour. However, as two thirds of the air is recirculated after it has been washed and filtered and heated or cooled and its humidity has been corrected, there are actually introduced only one and two thirds changes of fresh outside air per hour for these locations. The inlets and outlets are located on the ceilings 12 to 21 feet (3.6 to 6 meters) above the floors. For the floors above the fourth, including the corridor in the medical department, where a series of examinations were made, the air is filtered and heated in the cold months but not cooled or humidified and is changed six to twelve times, each change bringing in fresh air.

METHODS

Medium.—The culture medium was a nutrient agar prepared according to the "hormone" method.[5] After some experimentation the following formula was adopted: water 1 liter, chopped beef heart 500 Gm., neopeptone (Difco) 10 Gm., sodium chloride 5 Gm., dextrose 3 Gm. and agar (flaked) 24 Gm.; final p_H 7.4 to 7.5. This amount of agar was found necessary to prevent slipping in the tubes. It produces a medium rather too stiff for optimal cultural purposes, but with the Wells air centrifuge technic this degree of stiffness is necessary. Each batch of medium was tested for capacity to promote the growth of the more delicate strains of streptococci from the air. Enrichment with human plasma, casein digest or glycerin-potato extract was not found advantageous.

Air Sampling.—About 25 cc. of the warm melted agar medium was placed in a sterile Wells centrifuge cylinder provided with a rubber stopper with a large hole loosely plugged with cotton. No sheep's blood or other blood was added to the medium, and in this respect the procedure was a deviation from the usual. The amount of blood which has been recommended,[1] although facilitating the recognition of colonies of alpha hemolytic streptococci, clouds the medium to some extent. In this study a search was made for all types of streptococci, not only those acting on red blood cells but the gamma, or "indifferent," types, and it was found that fishing of streptococcus-like colonies was facilitated if the medium was clear. As a routine procedure, however, the addition of blood is desirable.

The air centrifuge was run for ten minutes, which generally accomplished the sampling of 20 cubic feet (0.56 cubic meter) of air per culture tube or 2 standard air samples of 10 cubic feet (0.28 cubic meter). For locations where the gage indicated that a greater amount of air was sampled in this period, suitable adjustments have been made in the tables.

The culture cylinders were incubated for forty-eight hours at 35 C. before streptococcus-like colonies were fished and for an additional day or two at room temperature before the total colony counts were made. All colonies even remotely resembling those of streptococci were fished by stabbing in semisolid hormone agar. Streptococci produce a rather characteristic type of growth in this semisolid medium. Typically there occurs growth along the full length of the stab with little or no spreading at the surface from the point of entry of the stab. Cultures producing a spreading white growth on the surface, although otherwise streptococcus-like in appearance, were discarded. This procedure probably resulted in the elimination of some strains, designated as "putative" streptococci by Buchbinder, Solowey and Solotorovsky.[6] The diphtheroid organisms, whose colonies may resemble those formed by streptococci, are much more aerophilic, as shown by a spreading surface growth and its limitation in the stab to the upper half or two thirds of the medium column. A further advantage of these stab subcultures was found in the fact that they permitted the recognition of microaerophilic strains of streptococci. The cultures were stained by the Gram method and those conforming to the streptococcus in form and reaction were streaked on rabbit blood agar plates. In the

Miss Natalie Williamson gave technical assistance.

From the Department of Public Health and Preventive Medicine, Cornell University Medical College, and the Macy Mutual Aid Association.

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3. R. H. Macy & Co., Inc.

4. Wells, W. F., and Wells, M. W.: Air Borne Infection, J. A. M. A. **107**: 1698 (Nov. 21) 1936.

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absence of chain formation only gram-positive, elongated diplococci forming streptococcus-like colonies were considered streptococci.

Spreading colonies of the subtiloid type were troublesome, particularly during the warmer months, in samples of air taken on the lower floors. As the result of overgrowth a good many samples had to be discarded. Because such overgrowth occurred rarely in cultures taken in the corridor of the medical department, it seems possible that the subtiloid types were derived chiefly from the merchandise, especially the textiles. No effective way to prevent this overgrowth was found, although the early ringing of such colonies with crystal violet aided.

In table 1 are given the data on the various locations in the store where samplings of air were made, from the basement to and including the ninth floor. The samples were taken between noon and 2 o'clock during April, May and June. As has been stated, the air furnished the floors up to and including the fourth occupancy, except as the activities of the population tended to stir up dust. Under the conditions of the department store industry, the total counts would seem to have no sanitary significance except as they reflect the efficiency of the cleaning methods employed.

On the other hand, the streptococcic counts bore some relation to the size of the crowds, as is indicated in table 1. For the locations with the larger crowds they are similar to those reported by Pincus and Stern [7] and Buchbinder and his associates [6] for theaters and subways but lower than those for schools. In the following section the factors influencing the number of streptococci in the air will be discussed.

As diphtheroid organisms are occasionally found in the nasopharynx and their colonies are readily recognized, counts of these were made in the general survey of the building. The percentage ranged from 0.5 to 28 of the total count, with an average for all locations of 8.5. No correlation here or elsewhere was observed between their numbers and the size of the crowds, and

TABLE 1.—*Locations in Department Store: Samples of Air Taken from April to June 1938*

Floor	Department	Comparative Density of Average Population	Number of Air Samples (10 Cu. Ft.)	Average Total Colony Count per Sample	Streptococci		Diphtheroid Organisms, Average Colony Count per Sample
					Average Isolations per Sample	Ratio of Alpha to Gamma Types	
Basement	Household appliances	++++	10	190	0.9	7-2	9
Main	General	++++	12	226	0.66	3-1	20
Second	Women's hats	+++	12	93	0.66	7-1	10
Third	Women's cotton dresses	++	12	152	0.25	2-1	12
Fourth	Boys' clothing	+	12	90	0.50	5-2	9
Fifth	Shoes	+	12	153	0.25	All alpha	8
Sixth	Notions	++	12	210	0.42	4-1	15
Seventh	Rugs	+	12	153	0.08	All gamma	1*
Eighth	Groceries	++	12	58	0.08	All alpha	2*
Eighth	Men's club	+++	10	51	0.66	5-1	3*
Eighth	Cafeteria	++++	6	44	0.33	All alpha	12
Ninth	Furniture	+	12	29	0.17	All alpha	2*

*Six samples of air.

is conditioned (humidified and cooled or heated), whereas that for the upper floors is fresh filtered air which is heated when necessary. The flooring is tile in the basement and on the main and eighth floors, but elsewhere it is carpeting. As to total colony counts per sample, the higher numbers occurred in the basement and on the main, third, fifth, sixth and seventh floors. As the table indicates, these numbers bore no necessary relation to the density of average population or to the type of ventilation. There seemed to be some relation to the character of the merchandise handled; that is, whether it would affect the dustiness of the air. Thus on the seventh floor there were comparatively few people and the fairly high count may have been due to the dust produced in turning rugs. On the ninth floor, where furniture is displayed, the average population is about the same as for the seventh, but the total colony count was low, presumably because the conditions were not such as would be likely to increase the dustiness of the air. In the cafeteria at the time the samples were taken the crowd was large, and yet the total bacterial colony count was low. There was, furthermore, no evidence that the total counts were influenced by the manner of ventilation. It would seem, then, that the size of these counts was influenced largely by conditions favoring the production of dust and its dispersal in the air and not primarily by human no evidence appeared which indicated that they bore any direct relation to contamination of the air resulting from human occupancy.

CAN THE NUMBERS OF STREPTOCOCCI IN THE AIR SERVE AS A MEASURE OF POLLUTION BY HUMAN BEINGS?

Buchbinder, Solowey and Solotorovsky [6] concluded, as a result of the comparison of alpha hemolytic streptococci isolated from the air with those obtained from throat swabs, that the "probable origin of most of the air streptococci is the human throat" and that the presence in air of alpha hemolytic streptococci indicates pollution by human beings. As has been mentioned, Wells [4] has suggested that alpha hemolytic streptococci may serve the same role for air as Esch. coli for water as an index of pollution. A similar proposal, as acknowledged by Wells, was originally made by M. H. Gordon [8] as an outcome of his bacteriologic studies carried out many years ago on the pollution of air by spray from the mouth. In figure 1 are shown curves which tend to substantiate this proposition. The curve for the monthly incidence of disabling colds among the employees is compared with the curves for (*a*) streptococci of all

7. Pincus, S., and Stern, A. C.: A Study of Air Pollution in New York City, Am. J. Pub. Health **27**: 321, 1937.

8. Gordon, M. H.: Report on a Bacterial Test for Estimating Pollution of Air, Rep. M. Off. Local Bd., London (1902-1903) **32**: 421, 1904.

types and (*b*) alpha streptococci for each month in a year except August. The determinations for streptococci represent the average of the findings for four locations, the basement and the main, second and fourth floors. The samples (10 cubic feet, or 0.28 cubic meter) were taken each time at the same locations, and the total number per month ranged from 21 to 68 and averaged 44. In "total streptococci" are included both alpha and gamma, or indifferent, types. It is felt that the gamma types and the few beta types recovered are as definitely related to the human throat and nasopharynx as are the alpha types. In support of this view, an examination of blood agar plates exposed to the coughs of normal persons and of those with or recovering from colds has shown indifferent streptococcic types similar to those recovered from the air, and these have been present in numbers somewhat similar to those of the alpha types (table 1), that is, the alpha outnumbered the gamma colonies up to 10 to 1, but occasionally the two types appeared in approximately equal numbers. It should be stated that our term alpha is equivalent to the term alpha hemolytic used by previous investigators.[9]

The curves for both total streptococci and alpha streptococci, particularly the former, show a striking correspondence throughout the year to that based on the prevalence of colds (number per thousand employees). All curves were low during the summer months, but with the development in October of the usual fall peak in the incidence of colds there occurred a corresponding rise in the curves for streptococci in the air. Although in December the crowds are by far the densest, the peak for streptococci in the air did not develop then but in February, when the curve for colds also reached its peak. The correspondence was particularly close in reference to total streptococci because of the fact that in January and February the gamma types in the air increased to a greater proportional degree than the alpha. The drop in the incidence of colds in March is reflected by a corresponding drop in the curves for streptococci in the air. It should be emphasized that this correspondence in the curves would not have become so apparent if the curves for streptococci had not been based on the average of the findings for all four locations.

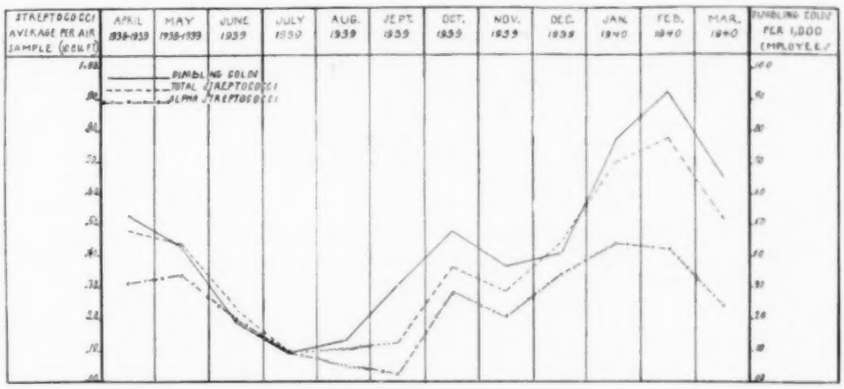

Fig. 1.—Average monthly isolations of streptococci from samples of air from four locations, compared with incidence of colds among employees.

It is of interest that microaerophilic streptococcic strains, recovered from the air, were prevalent only between January and April. The average for all locations was 14.7 per cent of the total strains, with the highest rate for the main floor, 23.7 per cent. The microaerophilic strains included both alpha and gamma types. A few strictly anaerobic strains were also found during this period and were recognized because of the routine use of stab cultures in semisolid hormone medium.

As previous reports have dealt only with alpha streptococci in the air, table 2 is inserted to facilitate comparison of the data.

The average is lower than that reported by Buchbinder and his associates[6] for schools (68 per cent) and subways (62 per cent), but the averages for the basement and the main floor closely correspond to their figure for air-conditioned theaters (32 per cent). On the other hand, these averages are much higher than that reported by MacDonald[9] for operating rooms in a hospital (13 per cent).

The averages for total bacteria (colony) counts varied from month to month, with the highest occurring in the spring and summer and the lowest in October and November.

CORRIDOR IN MEDICAL DEPARTMENT

For comparison with the results obtained in the store, samples of air were taken in a corridor in the medical department on the nineteenth floor. This corridor, which opens through a doorway at one end into a waiting room and at the other into a corridor running at right angles, is 9 feet wide and 60 feet long (2.7 by 18.2 meters) and has an area of 6,090 cubic feet (172.3 cubic meters). The floor covering is linoleum and is washed each night and occasionally waxed. On benches on the side opposite the air centrifuge sick employees waiting for medical attention were seated and were about 9 to 20 feet (2.7 to 6 meters) distant from the air inlet of the centrifuge. Among these patients there were a varying number suffering from infections of the upper respiratory tract. A record was kept of the number present at the time of each sampling of air and of the total number for the day. The patients begin to arrive at 8:45 a. m. and the medical staff of about fifteen between 9 and 9:15. Samples of air were taken on Mondays at the times stated in table 3. The figures for patients state merely the average number present at the time of sampling. The average total number per day for the entire period was 229.

TABLE 2.—*Percentage of Samples (Ten Cubic Feet, or 0.28 Cubic Meter, of Air) Containing Alpha Streptococci*

Location	Total Number of Samples	May 1 to November 1	November 1 to January 1	January 1 to May 1	Average
Basement..	142	25.6	25.9	43.4	31.6
Main floor.....	175	19.9	37.1	40.3	32.4
Second floor.....	106	20.7	16.6	25.6	20.9
Fourth floor.....	92	16.0	13.3	30.4	19.9

9. MacDonald, Kenneth: A Quantitative Bacterial Analysis of the Air of Operating and Delivery Rooms and Related Areas, Am. J. Hyg. **31**: 74, 1940. Wells and Wells.[4] Buchbinder, Solowey and Solotorovsky.[6]

The mean temperature during this period, January 14 to April 4, was 74 F., and the mean relative humidity was 33 per cent. The conditions of the air were thus such that droplets emitted by coughing and sneezing would be likely to evaporate quickly, leaving the droplet nuclei of Wells.[4]

As indicated in table 3, with increasing population and activity beginning about 9 a. m. the total bacterial colony count rose to a peak at about 11 a. m. and then gradually decreased to a low point at 1:30 p. m., with another but less pronounced rise and fall in the afternoon. The curve for streptococci, shown in figure 2, followed closely that for total bacteria, except that there was no second rise in the afternoon. In figure 2 the curve for streptococci is compared with that for the average number of patients at the times of sampling. The former reached its peak about two hours after the latter. As other conditions were approximately equal, there would seem to be some indication that droplet nuclei carrying streptococci accumulated in the air during this two hour period but then decreased and did not affect the streptococcic count for the afternoon. The opposite the benches on which the patients were seated. The lamps are claimed to give an output of ultraviolet radiation "better than 93 per cent in the one wave length 2,537 angstrom units." On the days on which the air was irradiated the lamps were in operation from one half to two hours before samples of air were taken. As the figures in table 2 indicate, this exposure apparently killed all the streptococci in the air except in 2 instances in the morning and in 1 in the afternoon. It had much less relative effect on the total counts, the reduction during the day ranging from none to 55 per cent.

Buchbinder, Solowey and Solotorovsky [6] have reported in detail on the forms and the biochemical properties of streptococci recovered from the air in a wide variety of locations. Although our series of strains, studied by similar methods, is much smaller, it has seemed desirable to report our findings in a comparative way. Of 423 strains isolated, 31.9 per cent produced chains of moderate to considerable length in semisolid hormone agar, as compared with the 39.6 per cent obtained by these investigators for cultures growing in nutrient

TABLE 3.—*Bacterial Counts, Corridor of the Medical Department, Jan. 14 to April 4, 1938*

	Ultraviolet Lamps Off (8 Sampling Days)						Ultraviolet Lamps On (8 Sampling Days)		
				Streptococci Isolated per Sample					
Time	Average Number of Patients	Number of Air Samples (10 Cu. Ft.)	Average Bacterial Colony Count per Sample	Average	Highest	Ratio of Alpha to Gamma	Number of Air Samples	Average Total Colony Count per Sample	Streptococci Isolated per Sample
8:45 - 9 a.m.	8.0	16	31	0.31	1.5	3-1	10	45	0.0
9:30 - 10 a.m.	20.0	18	72	0.61	1.0	3-2	12	51	0.15
10:45 - 11:15 a.m.	8.0	16	90	0.7	1.5	2-1	16	50	0.0
11:45 a.m. - 12 noon	5.0	16	68	0.5	2.0	All alpha	16	46	0.0
1 - 2 p.m.	3.2	18	61	0.33	1.0	2-1	8	50	0.0
1:30 - 2 p.m.	3.7	16	53	0.31	1.0	2-1	10	45	0.0
2:45 - 3 p.m.	4.1	18	76	0.1	0.5	1-1	10	34	0.1
3:30 - 4 p.m.	4.6	14	51	0.1	0.5	6-1	6	54	0.0

curves in figure 3 are based on the data on the corridor for the period from September 12 to November 14, during which 22 samples of air were cultured at each of the time periods. The average number of patients present on the sampling days was 219, approximately the same as in the winter months. The mean temperature was 1 degree higher, 75 F., and the average relative humidity considerably higher, 48 per cent. The total colony counts exhibited a fluctuation throughout the day similar to that for the cultures made during the winter months (table 3) and were only 9 per cent lower, taken as a whole. On the other hand, only about one third as many streptococci were found in the air through the greater part of the day. This finding conforms to that for the store and is similarly related to the lower incidence of colds. The general trend of the curve for streptococci was similar to that for the winter months except for a second rise in midafternoon during the fall months. This was associated with a rise in the average number of patients. As was true for the store, gamma streptococci were relatively more numerous in the air during the winter months than during the fall.

In table 3 data are also given indicating the effect of ultraviolet irradiation on the total colony counts and on the number of viable streptococci in the air. The irradiation was the output of three Hanovia Safe-T-Aire lamps on stands 6 feet (1.8 meters) high, placed about 18 feet (5.4 meters) apart along the wall of the corridor

broth. Chain-forming streptococci occurred in greater frequency in samples of air taken in the corridor of the medical department than in those from the store, the percentage being 51.1 for the corridor and 27.7 for the store. Fermentation tests were carried out on 293 strains, with essentially the same type of basal medium as that of Buchbinder and his associates, with the three

TABLE 4.—*Comparison of Data on Strains of Streptococci Recovered from the Air*

	Buchbinder and His Associates	Torrey and Lake
Total strains	1,949	292
Str. salivarius	58.4	40.0
Str. mitior	16.3	22.2
Str. ignavus	8.6	24.3
Str. equinus	9.7	6.2
Str. faecalis	4.4	6.5
Nonhemolytic streptococci, I, II, III	2.7	1.0

differential carbohydrates, lactose, salicin and mannitol, employed for the Holman classification. Tests with raffinose were also made. As was the experience of these investigators, many strains from the air grew rather poorly and fermented the test substances less actively than do strains freshly isolated from the mouth. In table 4 the distribution of our strains from the air in

percentages is compared with the figures reported by Buchbinder and his associates.

The correspondence in the percentages is close in respect to Streptococcus mitis, Streptbcoccus equinus, Streptococcus faecalis and nonhemolytic streptococci. The greatest divergence is in the percentages for Strep-

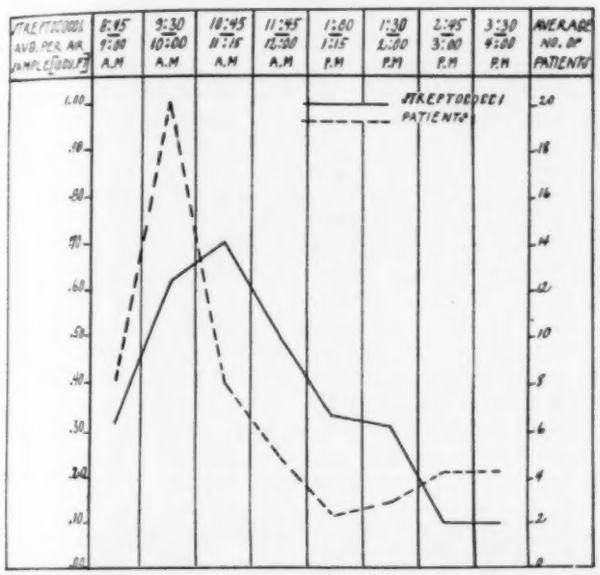

Fig. 2.—Data on streptococci isolated from samples of air in the corridor of the medical department, Sept. 12 to Nov. 14, 1938 (eleven sampling days).

tococcus ignavus. This difference seems principally due to the high percentage of gamma types among our strains which in fermentation tests conformed to Str. ignavus. Among the alpha strains alone 17.1 per cent were Str. ignavus, which may be compared with the 11.9 per cent for theaters and the 14.2 per cent for street air reported by Buchbinder and his associates. Safford, Sherman and Hodge [10] have reported that of 322 predominant streptococcic strains from normal human throats 290 constituted a homogeneous group when subjected to tests which Sherman has found of differential value in the classification of streptococci. Although on horse blood agar the reaction varied from gamma to alpha, weak alpha being characteristic, they were all considered representatives of the species Streptococcus salivarius, as were the remaining 32 strains which showed some variation from the type. In the light of these authors' conclusions, and although Str. ignavus is not mentioned, it seems probable that our strains distributed under the specific designations salivarius, mitis and ignavus, whether gamma or alpha in action on blood agar, may be properly designated as salivarius. On this basis the percentage of Str. salivarius recovered from the air was 86.5 as compared with the average of 83.2 per cent reported by Buchbinder and his associates on the same basis. A surprising feature of the strains recovered from the air is the relatively low percentage fermenting raffinose, 36.6 in our series and 40 reported by Buchbinder, as contrasted with 93 for pharyngeal streptococci as reported by Safford, Sherman and Hodge. Buchbinder and his associates,[6] however, in routine cultures of material from the throat taken at a clinic found that only 50 per cent of the streptococci isolated fermented raffinose.

10. Safford, C. E.; Sherman, J. M., and Hodge. H. M.: Streptococcus Salivarius, J. Bact. **33**: 263, 1937.

COMMENT

The most interesting finding which emerged from this study was the close correlation between the curves for average prevalence of streptococci in the samples of air from four locations in the department store and those for the prevalence of colds among the thousands of employees. Obviously too few of the employees were near enough to the inlet of the centrifuge to account for the close correlation between the prevalence of streptococci in the air and the rate for colds among the whole body of employees. On the other hand, the customers so greatly outnumbered the sales force in the localities chosen that they may be accepted as the main source of pollution of the air by organisms from the respiratory tract. If it is granted that such was the case it would then follow that the rate for the prevalence of colds among the employees, as indicated by the records of the medical service, seemed to reflect strikingly the rate for colds among the general population, as is indicated in a parallel rise and fall of the two curves throughout the year. Density of crowds and prevalence of colds are the two important factors influencing pollution of the air by bacteria originating in the human respiratory tract, but of the two the latter seems to have the greater importance. During December the store is more crowded than at any other time, but the peak for the prevalence of streptococci of oral origin came two months later, when the crowds were smaller but colds most prevalent.

The relative influence of these two factors is further illustrated by the experiments conducted in the corridor of the clinic at two seasons during which the number of people to whose exhalations the air centrifuge was exposed was definitely known and approximately equal at the sampling times and the general prevalence of

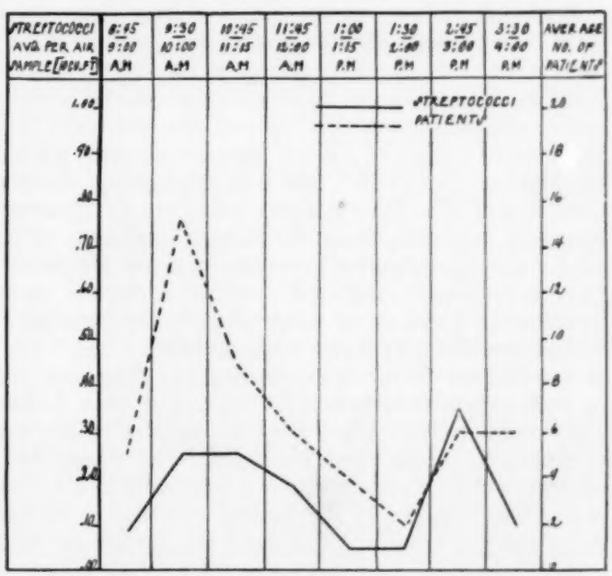

Fig. 3.—Data on streptococci isolated from samples of air in corridor of medical clinic, Jan. 14 to April 4, 1938 (fifteen sampling days).

colds was different. In the fall (fig. 3), when the incidence of colds was comparatively low, there occurred only a slight increase in the streptococci in the air with increasing numbers of persons, whereas in the winter (table 3 and fig. 2) the numbers of persons and of streptococci increased and decreased in more direct relationship. However, what proportion of these

streptococci were of immediate human origin and what proportion of remote origin, carried by dust stirred by increasing activity, cannot be stated. MacDonald,[9] in his study of the bacterial content of the air of operating rooms in a hospital, found a positive correlation between the number of persons in a given situation and the bacterial counts for the air, both as to total numbers and as to alpha hemolytic streptococci. A similar correlation was apparent in reference to total numbers in the air of the corridor of the clinic, but, as has been explained, might or might not be observed in respect to the streptococcic content of the air, depending on the prevalence of infections of the upper respiratory tract.

As an indicator of pollution of the air by oral discharges, previous investigators have utilized the alpha hemolytic streptococcus for the good reason not only that it is the predominant streptococcic type in the oral secretions but also that its colonies are more readily recognized when growing on the sheep blood agar commonly employed in connection with the Wells air centrifuge. In this study the use of a clear medium has permitted the quantitative determination of the so-called indifferent, or gamma, types, whose colonies might not have been detected on a semiopaque blood agar lining the culture cylinders. The gamma types, it is felt, are as definitely referable to pollution of the air by cough spray as are the alpha types, and the curve for the combined alpha and gamma counts followed more closely that for the prevalence of colds than did the alpha count alone. This procedure also permitted the interesting observation that in this instance, at least, the gamma types in the air increased relatively to a greater degree when colds were particularly prevalent than did the alpha types.

SUMMARY

Bacterial analyses of the air of a large department store carried out with the Wells air centrifuge during the course of a year have shown a marked correlation between the numbers of streptococci of respiratory origin recovered from the air and the prevailing rate of colds as indicated by the medical records for the employees. This finding tends to substantiate the suggestion of Wells that the alpha hemolytic streptococcus may well be taken as an indicator of pollution of the air by nasopharyngeal discharges in a manner similar to that in which Esch. coli has been accepted as an indicator of pollution of water supplies by sewage.

The prevalence of streptococci and that of colds were at a minimum in the summer months. The first rise in both curves occurred in October, and then, following a drop in November, there occurred a steady rise to a peak in January and February. The streptococcic content of the air apparently was influenced to a greater proportional degree by the prevalence of colds than by the density of crowds. The store was by far the most crowded during December, yet the total count of streptococci was increased only slightly over that for October and was far lower than that for February, when the prevalence of colds reached a peak for the year. A closer parallelism in the curves for colds and for streptococci in the air was in evidence when alpha and gamma types were combined than when alpha types alone were considered. This was particularly true for January and February.

57 West Fifty-Seventh Street.

DEFLEXION ATTITUDES IN BREECH PRESENTATION

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CHICAGO

The management of breech presentation has received considerable attention in recent obstetric literature and various plans for delivery have been described with a view to improvement in results. In these contributions, the attack on common practice has been directed against unwarranted haste, premature traction, the abuse of cesarean section and the necessity of anesthesia. All these criticisms, I believe, are on a rational basis. It has been more or less accepted by many authorities on obstetrics that breech presentation is merely a reversed cephalic presentation which can be readily turned by external manipulation, thus obviating the difficulties so often encountered during delivery. Efforts to avoid breech extraction appear to be warranted in view of the fact that the fetal mortality in delivery by breech extraction is from three to five times that by vertex extraction and has been estimated by Rulison[1] to claim 14,000 babies annually in the United States. Whether or not this figure is too high, few will deny that because of complicated deliveries and resultant mortality and morbidity breech presentation should be considered pathologic. Those who advocate routine external version have apparently given little consideration to the etiologic factors conditioning the presentation and practically none to the fetal attitude in breech.

I must disagree primarily with the opinion that breech is just a reversed cephalic presentation; I believe that it represents a deviation from the normal in that it usually combines the presence of a deflexed fetus and an abnormally shaped uterine cavity. In this communication, I wish to call attention to certain clinical features of breech presentation which have not been commonly recognized. I am of the opinion that the high mortality results from a combination of (*a*) the maternal complications favoring breech presentation, (*b*) the fetal attitude and (*c*) the management of the presentation—collectively. Since much has been written in the literature regarding the accepted etiologic factors and the management of breech presentation, I shall refer to these phases briefly and direct my discussion chiefly to that which has been but little mentioned, namely the deflection attitudes in breech presentation.

ETIOLOGY OF BREECH PRESENTATION

The etiology of the breech presentation is usually stated as anything which disturbs the normal utero-fetal accommodation by altering either the space in the uterine cavity or the shape of the fetal ovoid; it is divided into maternal and fetal factors. Under maternal factors one finds:

1. Abnormally developed uteri, such as arcuate, bicornuate and septate.
2. Tumors in the uterus or in the pelvis encroaching on the lower uterine segment.
3. Low lying placenta (previa).
4. Hydramnios, multiple pregnancy and other conditions causing distention of the uterine cavity.
5. Contracted pelves.
6. Multiparity.

Read before the Section on Obstetrics and Gynecology at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 5, 1941.

1. Rulison, E. T.: Am. J. Obst. & Gynec. **31**: 49 (Jan.) 1936.

The fetal factors are:

1. Prematurity, in which there is a relatively greater amount of liquor present.
2. Multiple pregnancy, in which there is usually an associated hydramnios.
3. A large cephalic pole, as in hydrocephalus and dolichocephalus.
4. Fetal monstrosities.

I wish to point out that the same etiologic factors are commonly encountered in transverse presentation and that deviation from cephalic to transverse or to breech presentation is but a matter of degree. The fact that in the majority of these cases the available uterine space is greater in its longitudinal axis accounts for the fact that breech occurs about six times as frequently as does transverse presentation.

For some years I have noted the frequency with which extension occurs in the breech attitude and also the relative infrequency of its occurrence in cephalic presentation, and I have speculated that this may possibly be one of the causes of breech presentation. In reviewing the literature I discovered that, while most textbooks have taken little or no notice of the etiologic role of the extended fetus, Vartan [2] recently has expressed a view similar to mine. Impressed by the fact that the usual causes ascribed to breech presentation are actually seldom found, Vartan decided to investigate the subject from clinical records. He collected 969 cases of breech deliveries from five London hospitals and found that in 37.3 per cent extension of the legs occurred; in multiple pregnancy and prematurity there was an incidence of 32.7 per cent, and only 4.5 per cent were associated with placenta previa and/or contracted pelves. He believes that the fetus in the breech presentation ordinarily tends to undergo spontaneous version as term approaches and that when the breech presentation persists it is due to factors which prevent spontaneous version from taking place. Extended legs, he believes, are the chief cause for this failure. In multiple pregnancy, according to this author, the presence of more than 1 fetus in the uterus hampers the movement of each and thus becomes an important factor. He also stresses the role of prematurity, at which stage breech presentation is naturally more frequent than at term. He likewise feels that the additional factors usually attributed to the causes of breech presentation are of little etiologic significance. His data were obtained entirely from case histories, and no mention is made in his article of any roentgen studies in these cases. My observations and deductions are based on examination of roentgenograms taken in late pregnancy and in the first stage of labor.

Nandi [3] adds "habitual breech" to the list of causes. In 50 per cent of cases of this type, none of the usual factors said to cause this presentation were present. He cites numerous cases from the literature since Dahlem's first report in 1886 of habitual breech of

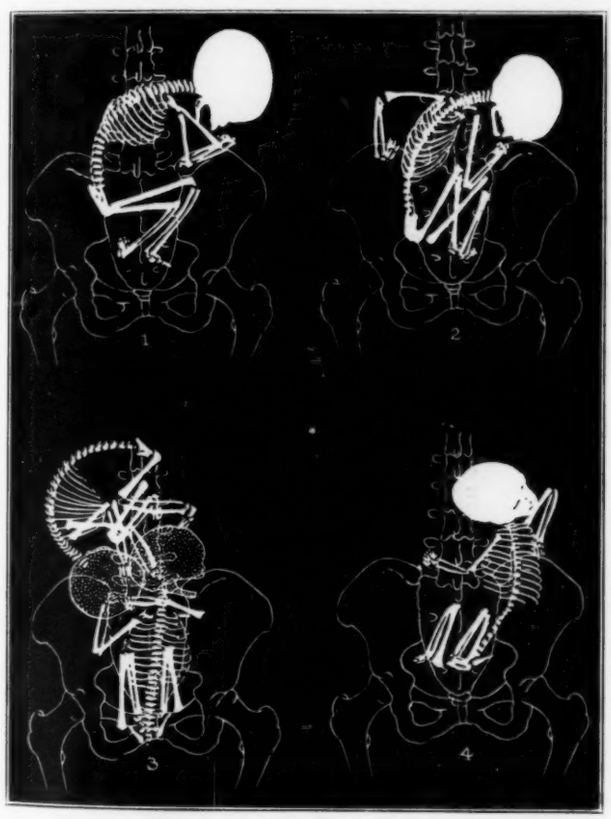

Fig. 1.—Complete breech: attitude of complete flexion; full term (prone posture).

Fig. 2.—Complete breech: attitude of complete flexion except for extended (displaced) left arm (prone posture).

Fig. 3.—Twins: first, breech with legs flexed, spine, arms and head extended and head turned to side; second, cephalic in attitude of complete flexion (prone posture).

Fig. 4.—Breech: legs flexed, spine extended, arms displaced, head rotated 90 degrees (prone posture).

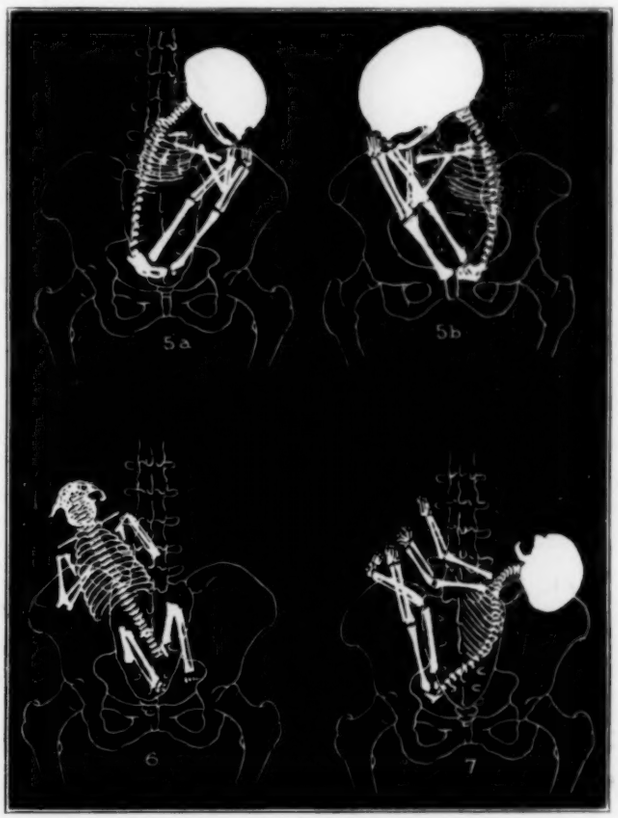

Fig. 5.—*a*, Frank breech: legs and spine extended; head partially deflexed (prone posture). *b*, Same with dorsal posture. Note distortion of fetal shadow, especially the head. (Errors in diagnosis common with this view.)

Fig. 6.—Anencephalic breech: legs flexed, the spine extended (prone posture).

Fig. 7.—Breech: extreme deflexion attitude similar to brow (inverted); arms and legs extended, spine deflexed, head tilted backward (prone posture).

2. Vartan, C. K.: Lancet **1**: 595 (March 30) 1940.

3. Nandi, Gorachand: Calcutta M. J. **31**: 289 (Dec.) 1936.

from three to seven repeated breech deliveries by the same women. Nandi believes that habitual breech presentation is a distinct clinical entity in which there may be an individual hereditary tendency.

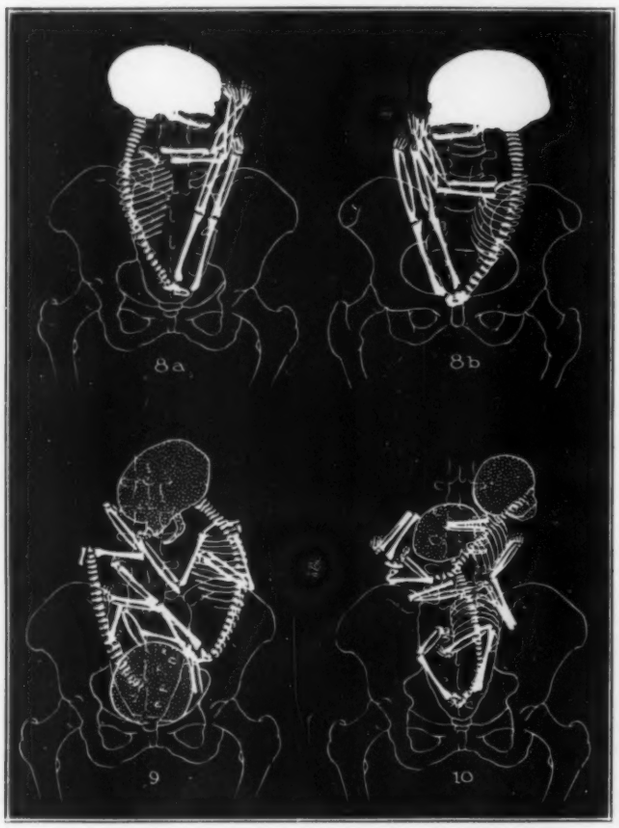

Fig. 8.—*a*, Frank breech: legs, arms, spine and head extended (prone posture). *b*, Same, with dorsal posture.

Fig. 9.—Twins: cephalic and frank breech; legs and spine extended (prone posture).

Fig. 10.—Twins: both breech; legs flexed, spines extended, heads extended and rotated (prone posture).

VARIETIES OF BREECH PRESENTATION

Breech presentation is classified as complete and incomplete. Complete breech presentation is one in which the fetus is completely flexed and the buttocks and feet present together. Ordinarily, a complete breech presentation is found under conditions which are more nearly those in cephalic presentation except that the head is in the fundus, presumably because it is not well adapted to the lower uterine segment. It is a matter of clinical observation that when the fetus remains well flexed, as in complete breech attitude, the underlying causes for this presentation do not usually interfere with the normal mechanism and spontaneous delivery. Even with attitudes of flexion in breech presentation, one sees in roentgenograms that variations frequently occur; the head is often turned to the side and one or both arms are somewhat extended.

Incomplete breech presentation includes:

1. Frank breech presentation, in which the legs are extended along the trunk, the spinal column is straightened and the head is erect, as in military attitude.
2. Footling presentation, in which one or both feet present in advance of the buttocks, owing to extension of the leg.
3. Knee presentation, in which one or both knees present owing to extension of the thighs and flexion of the legs.
4. Extension of the arms.
5. Extreme deflexion attitude—as an inverse brow presentation.

Note that all the latter included under incomplete breech presentation are varieties of deflexion attitudes comparable to the deflexion attitudes in cephalic presentation, a group considered distinctly pathologic. In this variety, one more often finds the etiologic factors such as uterine anomalies, hydramnios and the like, which so alter the uterine cavity that either the fetus has greater mobility than usual, and thus extends, or it fits the uterine cavity in the extended attitude more comfortably than in flexion.

An analysis of roentgenograms taken during late pregnancy and in the first stage of labor over the past several years reveals the fact that in cases of breech presentation the deflexion attitude is the rule rather than the exception. In cephalic presentation, deflexion occurs in a small percentage of cases. Many obstetricians concur with Williams'[4] statement that the mechanism of labor is the same in the different varieties of breech, but this is indeed questionable. It has been my observation that dystocia occurs in cases of deflexion, whereas the well flexed complete breech presentation follows the normal mechanism and usually delivers spontaneously.

RADIOLOGIC FINDINGS

Examination of a series of roentgenograms reveals that, while complete flexion usually obtains in cases in which the fetus presents by vertex, this is not usual

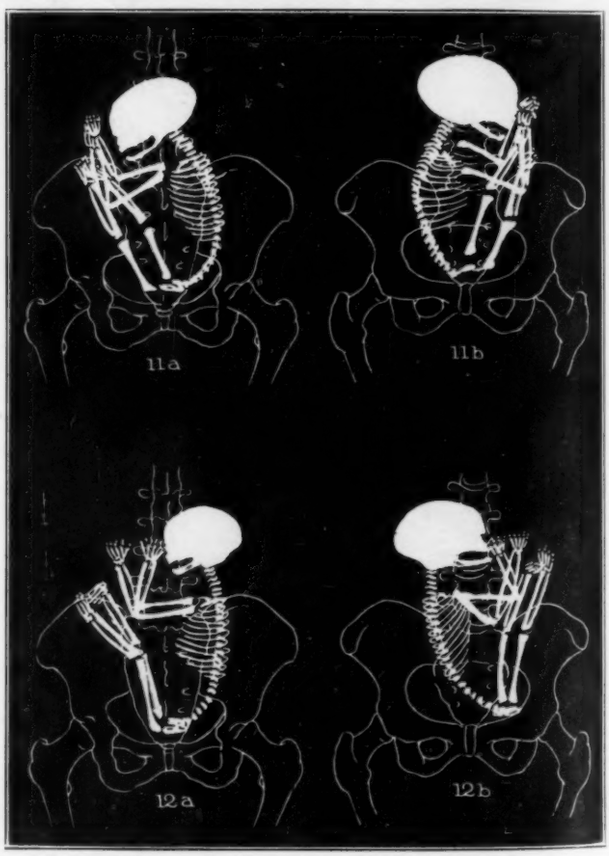

Fig. 11.—*a*, Frank breech: legs, arms and spine extended (prone posture). *b*, Same, with dorsal posture. Note distortion of fetal shadow.

Fig. 12.—*a*, Frank breech: legs, arms, spine and head extended (prone posture). *b*, Same, with dorsal posture.

with breech presentation. I have observed that incomplete breech presentation is the rule, that the legs are usually extended and that often there is additional

4. Williams, J. W.: Obstetrics, ed. 5, D. Appleton & Company, 1929.

evidence of deflexion. The spine is usually straight, particularly in the lower half, and the head is shown to be especially mobile. This is evidenced not only by the frequent occurrence of extension but rotation and

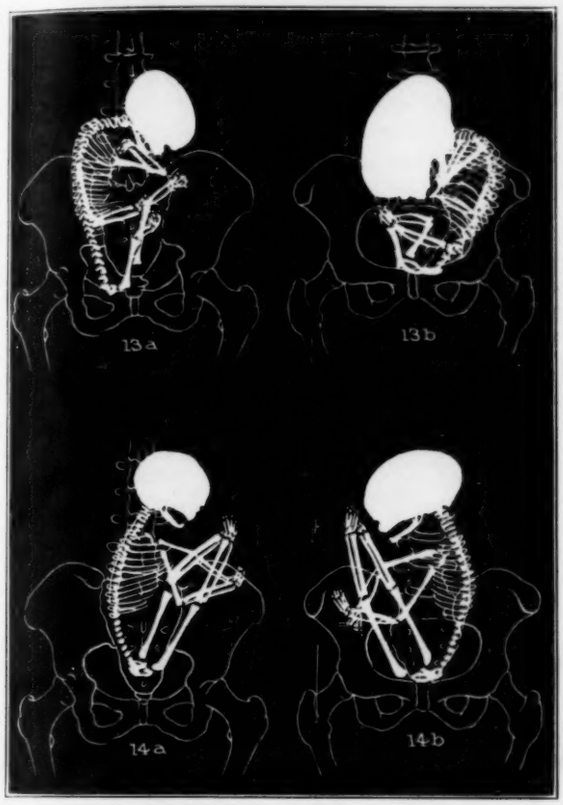

Fig. 13.—*a*, Complete breech: complete flexion except for one leg and caudal portion of spine (prone posture). *b*, Same, with dorsal posture. Note distortion of head simulating hydrocephalus.

Fig. 14.—*a*, Frank breech: extension of legs, arms, spine and head (prone posture). *b*, Same, with dorsal posture.

asynclitism as well. The displacement of the head is often of a degree rarely observed in cases of cephalic presentation. In many cases the head is turned so that the face points toward one shoulder and is sometimes tilted as well. The roentgenogram reveals that in the incomplete breech attitude the arms are rarely well flexed and crossed closely on the chest; they have been observed in various locations: with the hands in front of the face or one or both arms extended along the trunk. Even in cases of complete breech presentation extension of one or both arms has been noted, as in figure 1, in which the elbow was extended with the hand apparently resting on the side of the chest. An extended arm is also occasionally seen in roentgenograms of vertex presentation, in which the fetus is otherwise well flexed, but this finding is rare as compared to its occurrence in cases of breech presentation.

No statistical summary of these observations is presented here, nor will an attempt be made to estimate the percentage of deflexion attitudes in breech presentation, since routine roentgenography was not carried out. While I feel that it would be desirable to have roentgenograms made in all cases of breech presentation, the economic factor often makes such a procedure prohibitive. However, a large number of films taken in late pregnancy and the first stage of labor has been examined over a score of years and illustrates the prevalence of the deflexed fetus—a finding contrary to the usual impression given by textbooks on obstetrics. Warnekros,[5] in his atlas of obstetric roentgenograms published in 1918, called attention to the straightening of the spine and deflexion of the head during the first stage of labor in cases of breech presentation. This he attributed to the effect of uterine contractions on the fetal ovoid after rupture of the membrane. Similar observations, however, have been observed by me during pregnancy in which membranes were intact, and even in the presence of hydramnios. Therefore, I believe that the deflexion is primary and is not produced by contractions of the uterus.

Interpretation of the fetal roentgenogram must be made with great care in order that errors may be avoided. In 1923, Arens and I[6] first called attention to the danger of mistaking a normal breech fetus for one with hydrocephalus because of distortion of the shadow of the head on the anteroposterior film. We advised at that time that such an error could be obviated by taking both dorsal and prone views and subsequently comparing the findings. Recently, Dippel and King[7] described a case similar to that which we reported in which the same error was made. They discussed at length the means of avoiding repetition of such errors in future cases.

The accompanying illustrations show clearly the advantage of comparing films taken in both dorsal and prone postures. Distortion is proportionate to the distance from the film of the object under examination. Hence, the prone posture usually gives a more accurate fetal picture, and the dorsal is more likely to exaggerate certain fetal parts, especially the head lying anteriorly in the fundus. In many instances, the addition of a lateral view will aid in accurately delineating the fetal outline.

MANAGEMENT OF BREECH PRESENTATION

The term breech delivery implies a spontaneous process in which no interference is required except the usual manual aid for the arms and head; this is comparable to spontaneous cephalic delivery. Breech extraction is an operative procedure in which traction is made on the fetal buttocks or legs, followed by extraction of the arms and head and is comparable to forceps extraction in cases of cephalic presentation. Incomplete breech presentation, like the deflexion attitude of cephalic presentation, calls for extraction more frequently than the complete breech presentation for the following reasons: 1. The membranes are likely to rupture early, owing to late engagement and the incomplete filling of the lower uterine segment by the irregular buttocks; this also favors prolapse of the cord. 2. The breech is frequently arrested in midpelvis because it forms a rigid wedge instead of a flexible ovoid. This is due to splinting of the trunk by the extended legs, lateral flexion of the trunk being thus inhibited. 3. Displaced and nuchal arms cause delay and difficulty in delivery of the shoulders; arms that are extended before or during labor are not likely to become flexed spontaneously during delivery. 4. An extended after-coming head may become more deflexed during the process of extraction and thus render aid more difficult.

The physician is usually unable to determine the extent of the deflexion of the fetus by ordinary clinical means. One occasionally may palpate the extended legs on the trunk and even recognize a foot in the

5. Warnekros, Kurt: Pregnancy and Labor in Roentgenograms, Berlin, 1918.

6. Stein, I. F., and Arens, R. A.: Roentgenograms of Fetal Skeleton as Positive Sign of Pregnancy, J. A. M. A. **81**: 4 (July 7) 1923.

7. Dippel, A. L., and King, A. B.: Am. J. Obst. & Gynec. **38**: 1047 (Dec.) 1939.

uterine fundus along with the head, but in most instances the precise attitude of the fetus cannot be definitely determined except by roentgenograms. When the diagnosis of complete or incomplete breech has been established, corroborated by the roentgenograms, the question arises as to whether there should be any difference in the treatment of the two varieties. It is a matter of experience that those who favor external version of breech in late pregnancy have found that such a procedure may be readily accomplished when the fetus is well flexed. However, the fetus is likely to return to its original position owing to the fact that it adapts itself more comfortably to the available space in this presentation.

When the fetus is primarily deflexed, external version is difficult to perform and often fails altogether; furthermore, manipulation may increase the deflexion of the fetus and may cause premature rupture of the membranes and prolapse of the cord. It is for these reasons, I believe, that external version is contraindicated in the presence of deflexion attitudes. In my own practice, I rarely perform external version in breech presentation, since I feel that when the fetus adapts itself to this position one should plan to deliver it by breech.

When one finds that the breech is well flexed, one should anticipate spontaneous delivery, and, except in those cases in which there is a definite disproportion, it usually occurs. When, after clinical and roentgen study an incomplete breech presentation is found, the extent and degree of deflexion is carefully considered in the light of probable complications, and preparations are made for extraction in the second stage of labor. Noting the extended legs of frank breech presentation, one may anticipate that labor will progress normally until the breech reaches midplane, at which point arrest usually occurs. Normal mechanism no longer follows. Such arrest does not always require extraction in multiparas, but it usually does in primiparas. Traction on the buttocks must be made unless it is found that the breech is movable in the pelvis and can be sufficiently displaced to bring down one or both legs. The latter procedure will greatly facilitate delivery. The employment of forceps is not applicable to the breech. Traction is made by a finger in the anterior groin or on the legs. When it has been seen in the roentgenogram that the arms are displaced from the fetal trunk, extending along the body or upward over the head, one may not expect that they will be spontaneously flexed and crossed on the chest; therefore it is advisable to avoid traction on the fetal trunk until the arms have been replaced by the internal hand. It is unwise to attempt delivery of the shoulders in the presence of extended arms, and under no conditions should an attempt be made to deliver the aftercoming head until the arms are delivered outside the vulva. Furthermore, I believe it unwise to make pressure on the uterine fundus during delivery of the trunk, as advocated by some, because pressure of the head on the shoulders may cause the arms to become displaced outward, and subsequently over the head. Such pressure should be applied only after the arms have been delivered and the head has been deliberately flexed. It is obvious that if the head is primarily deflexed one should first produce flexion—by the insertion of one or two fingers of the internal hand in the fetal mouth; otherwise the head may be arrested above the inlet by the chin against the promontory or behind the pubis. Therefore, before an attempt is made to impress the head into the inlet by applying pressure above the pubis with the external hand, it is essential that flexion of the head be assured. Unless the head is well flexed, the baby may be lost because of misdirected traction. However, when the head has been led into the pelvis in flexion, extraction is expedited and delivery may be completed either by the usual manual maneuvers or with the aid of forceps.

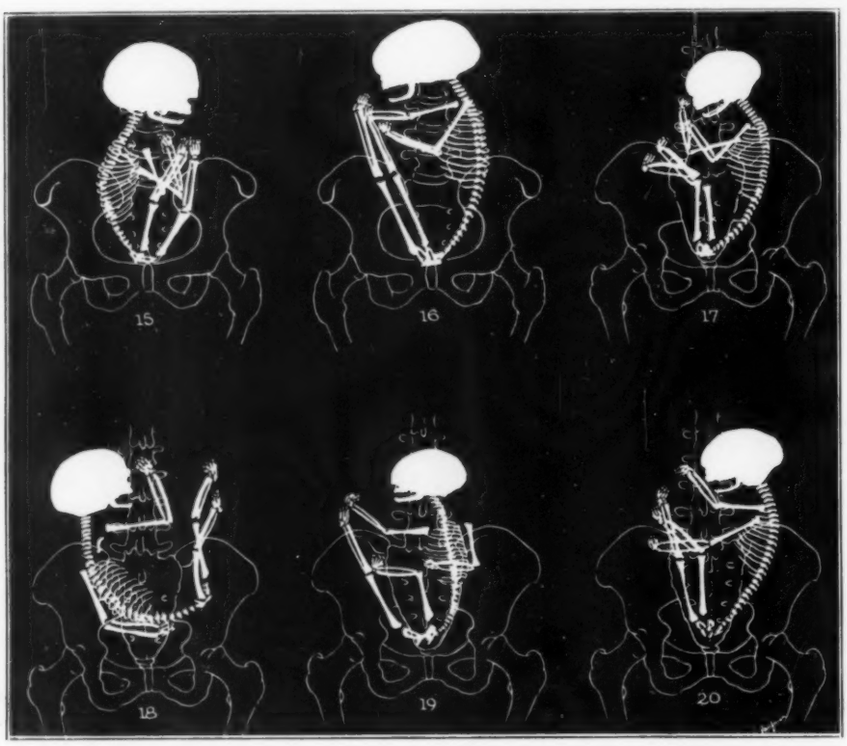

Fig. 15.—Frank breech: legs and head extended; magnification of head shadow suggested diagnosis of hydrocephalus; normal fetus delivered (dorsal posture).

Fig. 16.—Frank breech: legs, arms, spine and dolichocephalic head extended (dorsal posture).

Fig. 17.—Frank breech: legs, spine and head deflexed (prone posture).

Fig. 18.—Frank breech: pronounced deflexion of legs, arms and head; breech in iliac fossa as in oblique presentation; delivered as frank breech.

Fig. 19.—Frank breech: one leg and one arm deflexed, spine straight and head deflexed (prone posture).

Fig. 20.—Frank breech: legs and arms extended; spine and head deflexed (prone posture).

SUMMARY

Frank breech is the most frequent variety of breech presentation. It may be, as Vartan [2] states, that the extended legs prevent internal spontaneous version, thus causing the presentation. The extent of deflexion is often unrecognized unless a roentgen examination is made. The fetus in deflexion attitude seldom responds to external version and is most likely to demand extraction.

Careful scrutiny of roentgenograms to determine the extent and degree of deflexion, not only of the legs

but of the trunk, arms and head as well, will prove of great value in anticipating the difficulties which may be encountered. The roentgenograms must be accurately interpreted to avoid errors.

310 South Michigan Avenue.

ABSTRACT OF DISCUSSION

DR. HAROLD HENDERSON, Detroit: This paper emphasizes a fact which we have all realized for many years. The deflected breech favors dystocia because it fits the birth canal poorly and because it may occur in contracted pelves as well as in abnormally shaped uteri. The complete breech, on the other hand, follows a mechanism which closely approximates the normal. I seldom do external version for the reason that, in cases in which the polarity can be changed easily, flexion is complete and a relatively simple delivery may be expected. Not only is the frank breech difficult to turn, but damage may be done in the attempt. In a series of two hundred and twenty personal breech deliveries, approximately 75 per cent were deflexion attitudes. Since these cases were not checked routinely by roentgen examination, deflexion of the head and abnormal position of the arms do not enter into this percentage. Three fourths of the series were delivered by breech extraction, a percentage that is considered radical by some authorities and defended by others. In this series there was one delivery death and another in which a premature infant of 4 pounds died because of prolapsed cord. All other deaths were due to prematurity, placenta previa, abruptio placentae, monstrosity or some other cause not connected with the error in polarity. Goethals reports a corrected mortality of 6.9 per cent, Seeley and Siddal 6.5 per cent, Danforth and Galloway 5.85 per cent, and the Chicago Maternity Center 6.6 per cent. These patients, however, were delivered by interns, residents and a cross section of the hospital staff. Hansen of Lincoln, Neb., on the other hand, reports a corrected mortality of 0.8 per cent in a personal series. No other class of cases emphasizes the difference between the expert and the occasional operator, and all hospitals should insist that the primiparous breech requires consultation. In a recent unpublished five year review of the breech cases in a large general hospital, it was found that five times as many babies were lost through delivery by the untrained man as compared to the trained obstetrician. The danger of the breech position can be minimized by proper attention to the technic of delivery and by recognition of the fact that most breeches are complicated by deflexion attitudes. About one out of sixteen babies, as reported by our best clinics, die as a result of delivery by breech. This is truly an indictment of obstetric art. Recognition of the difficulty and improvement in our technic can do far more than external version in reducing the death rate.

DR. JOSEPH B. DE LEE, Chicago: I should like to call attention to the possibility of error in interpreting roentgenograms. The distortion of the head produced by the roentgen ray is not alone in the enlargement but also in the lengthening, depending on the position which the head happens to occupy in the field of the x-ray tube. One of the factors in creating the various fetal attitudes in cephalic as well as breech presentations is the shape of the fetal head. We distinguish two main classes: brachycephalus, short heads; dolichocephalus, long heads. Flexion takes place best in long heads, because the head levers are best differentiated, a long and a short lever existing. After either head, long or short, has become somewhat fixed, either in breech or in head presentation, the forces of pregnancy, the mechanical forces of pregnancy or of labor, tend to mold it in this attitude; thus in breech presentation the deflexion shown by Dr. Stein tends to become permanent, and the top of the head is flattened by the fundus of the uterus. When a round or a short head tries to enter the pelvis, if the conditions of the lower uterine segment do not favor flexion, or the shape of the pelvis favors deflexion, we are likely to have occipitoposterior positions and deflexion attitudes, even the extreme face presentation. Then too a dolichocephalus will favor extension when the head levers are not balanced properly. These deflexion attitudes, then, in dolichocephalus, depend on the factors which favor or disfavor the functions going on in labor. I disagree with Dr. Stein and Dr. Henderson regarding external version. I think that it ought to be widely practiced and widely recommended. Most of the breech presentations are not in the hands of Dr. Stein and Dr. Henderson and other specialists in obstetrics but are in the hands of the general practitioner, and the mortality in breech presentations with less skilful practitioners is high; if the mortality isn't so high, the damage to the baby's brain is high. Therefore I would recommend a mild, a gentle attempt to transform all breech presentations into head presentations before labor begins.

DR. EUCLID T. GADDY, Indianapolis: I have developed a simple method of external version which does not injure the fetus. About a week before the patient is due, I have the patient get in the knee-chest position. That takes the weight of the baby off the backbone and the pelvis. Then the physician can readily put one hand on the head and one on the pelvis of the fetus and make an external version in a very simple manner, and then when the patient arises the baby will stay in that position.

PAIN CAUSED BY DISEASE INVOLVING THE SENSORY NERVE ROOTS (ROOT PAIN)

ITS CHARACTERISTICS AND THE MECHANICS OF ITS PRODUCTION

L. McKENDREE EATON, M.D.
ROCHESTER, MINN.

Pain resulting from disease involving the sensory roots of the spinal nerves is frequently encountered in neurologic practice. The diagnoses made in 100 consecutive cases of root pain that I have observed attest the importance of the disease processes which produce this symptom. It is gratifying to note that in the majority of cases the pain is the result of protruded intervertebral disks or extramedullary tumors of the spinal cord, conditions in which brilliant therapeutic results are obtained in most instances.

I realize that radicular pain is not frequently encountered by physicians who are not neurologists, yet this condition must be considered in the differential diagnosis of a host of ordinary diseases. Fortunately, root pain has characteristics as definite as the pain of angina pectoris, pleurisy, peptic ulcer, arthritis and biliary colic, with which it is sometimes confused. The recognition of the characteristics of root pain directs the clinical search to the true seat of the disease and makes for gratifying therapeutic results. Unfortunately, these characteristics are not generally recognized. It is my purpose in this paper, therefore, to describe the outstanding characteristics of root pain which are valuable in differential diagnosis and to emphasize these characteristics by considering the mechanics of the production of the pain. In so doing I shall incorporate the evidence of a few clinical observations bearing on the problem. I shall not attempt a detailed consideration of the diagnosis of those lesions which manifest themselves by root pain, as the technic for elucidating the significance of radicular pain is available elsewhere.

CHARACTERISTIC DISTRIBUTION

Root pain is referred to the cutaneous areas supplied by the affected nerve roots (dermatomes). If numerous roots are involved, as occurs in carcinomatosis of the meninges, the pain is widely distributed. However, these diseases cause little diagnostic confusion because of the prominence of the associated symptoms. The root pain produced by tumors of the spinal cord or herniated intervertebral disks, however, is localized to

From the Section on Neurology, Mayo Clinic.

one, or at most only a few, nerve roots. Of the localized lesions, those of the cauda equina are likely to involve the greatest number of roots. The cutaneous distribution of the individual nerve roots has been carefully charted by Sherrington and others, and the illustrations in the textbooks of anatomy and neurology are useful aids in determining whether or not the pain under

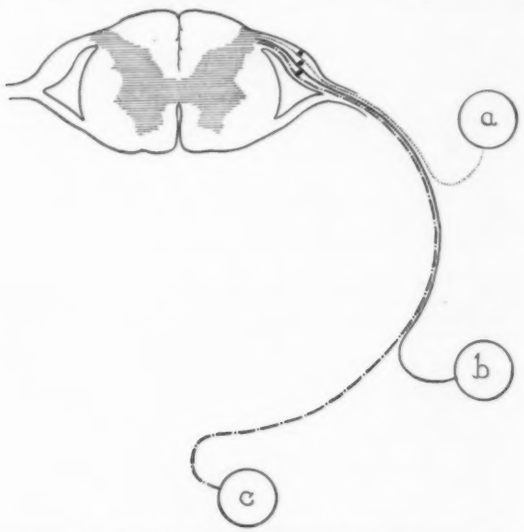

Fig. 1.—Groups of pain fibers in the sensory nerve root represented as single fibers to illustrate how incomplete involvement of the sensory root may produce pain in a localized part of the total region supplied by the diseased root. For example, pain may be referred to area *a* if fibers represented by the dotted line are involved in the sensory root, while fibers represented by the solid and broken lines escape.

investigation follows the distribution of a particular nerve root. The charts of Foerster are probably the most reliable.

Frequently pain is localized in a small part of the total region supplied by the affected root (case 1).

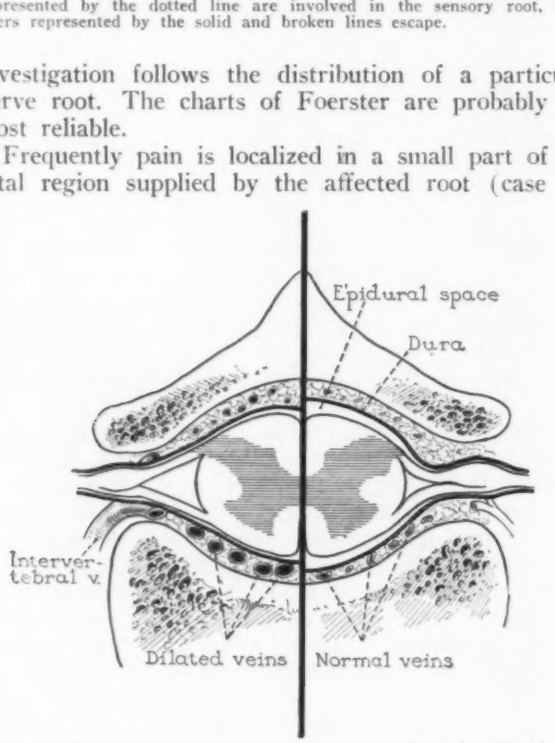

Fig. 2.—Drawing showing how root pain is produced by dilated veins of the epidural space secondary to increased intra-abdominal and intrathoracic pressure, such as occurs in coughing and sneezing and straining. The right half of the drawing represents the relationships at rest; the left half, while the epidural veins are engorged secondary to coughing, sneezing or straining.

Failure to comprehend this fact has led to much diagnostic confusion. To explain this, one may use the theory of incomplete involvement of the nerve root (fig. 1). If all the pain fibers of all the root filaments which make up the sensory root are equally involved, the pain should be projected throughout the total region supplied by the root. For example, if the fourth thoracic root is completely involved on one side, the pain should extend around the thorax to the sternum at the level of the nipple. However, if only those fibers supplying the thorax anteriorly or the axilla or the interscapular region are sufficiently diseased to give rise to pain, it will be referred to the respective regions supplied by the localized group of pain fibers in the sensory root.

EFFECT OF A SUDDEN INCREASE IN THE INTRA-ABDOMINAL AND INTRATHORACIC PRESSURE

A characteristic of root pain which is valuable in differential diagnosis is the tendency for it to be produced or intensified by coughing, sneezing, heavy lifting or straining, as in defecation. All these acts have in common a sudden increase in intra-abdominal or intrathoracic pressure. A brief review of the anatomy of the epidural space is of value in understanding the relationship of spinal pain to intra-abdominal and intrathoracic pressure. Between the dura mater and the bone and ligaments which make up the walls of the spinal

Diagnosis of Cause of Root Pain in One Hundred Consecutive Cases

	Cases
Diagnosis verified:	
Protrusion of one or more intervertebral disks	
In the lumbar region	53
In the cervical region	1
Tumors of the spinal cord:	
Meningoma	2
Neurofibroma	2
Ependymona	1
Glioma	1
Chordoma (in cervical region)	1
Epidermoid	1
Sarcoma	2
Metastatic carcinoma	2
Pathologic fracture of one or more vertebrae	1
Spondylitis	1
Radiculitis and arachnoiditis (verified at operation)	1
Post-traumatic spondylitis	1
Fracture of one or more cervical vertebrae	1
Spondylolisthesis with hypertrophy of ligamentum flavum	1
Pott's disease	1
Subarachnoid hemorrhage (in caudal region)	1
Diagnosis not verified:	
Protrusion of one or more intervertebral disks (very probable)	8
Radiculitis (very probable)	4
Leukemia (pain in leg may have been due to other causes)	1
Diagnosis uncertain	13
Total	100

canal lies the epidural space (fig. 2). This space is composed of loose connective tissue and blood vessels. The veins in this space are directly continuous with the veins in the retroperitoneal and retropleural spaces by way of the intervertebral veins. If the intra-abdominal and intrathoracic pressure is increased sufficiently, as in coughing, the veins surrounding these cavities are collapsed and the flow of blood from the intervertebral veins is impeded. Thus the veins of the epidural space are distended, the dura is displaced toward the spinal cord and traction is produced on the nerve roots which are fixed in the extraspinal tissue and enveloped by the dura. The nerve roots may even be compressed by the distended veins surrounding them. Although this traction or compression of normal nerve roots is insufficient to produce pain, it commonly does so if the root is diseased.

EFFECT OF STRETCHING THE NERVE ROOTS

Another characteristic of root pain is the production or intensification of pain by any maneuver which stretches the nerve root. Bending the neck so that the chin rests far forward on the thorax, stooping over without bending the knees, straight leg raising when lying on the back, or extension of the leg while the

thigh is flexed on the abdomen, as in testing for Lasègue's sign, are maneuvers which frequently indicate the root character of the pain under investigation by intensifying or reproducing it. To understand the mechanics of these characteristics of root pain, it is necessary to remember that the nerve roots are firmly attached to the spinal cord and that the spinal cord

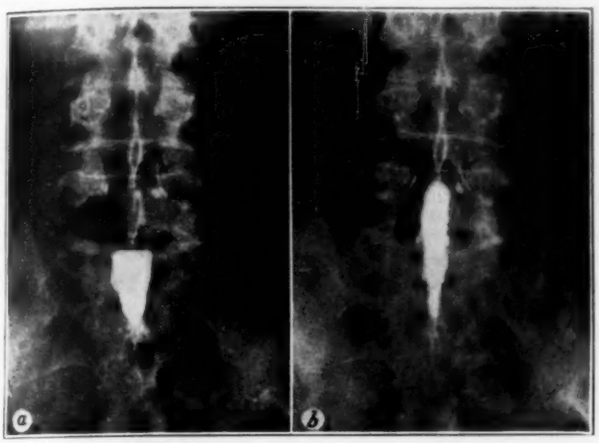

Fig. 3.—*a*, iodized oil filling dural cul-de-sac as the patient stands at rest; *b*, while the patient was straining; this shows how the dural sac is compressed by engorgement of veins in epidural space.

is firmly anchored to the brain through the brain stem. Furthermore, the nerve roots course caudally and laterally from the lower cervical, thoracic and lumbosacral segments of the spinal cord to emerge from the spinal canal through their respective intervertebral foramina. Flexion of the neck causes the spinal cord to be slightly displaced upward; this tenses the nerve roots, which are fixed peripherally in the extraspinal tissue, and thereby produces pain in the region supplied by the diseased roots.

This is often of particular value in distinguishing pains of extraspinal origin. For instance, it is often hard to tell whether a given pain in the distribution of the sciatic nerve is due to sacroiliac arthritis or to an intraspinal lesion such as protrusion of an intervertebral disk. If bending the neck so that the chin rests far forward on the thorax, while the lower part of the back is immobilized by support in a chair, definitely intensifies the pain, one should suspect that the origin of the pain is intraspinal.

Stooping forward without bending the knees, straight leg raising, and extending the knee when the hip is flexed on the abdomen are maneuvers which tense the roots of the cauda equina and produce pain in roots that are diseased.

At times root pain will be reproduced or intensified by compression of the jugular veins. Such intensification usually signifies that the pain is caused by such a lesion as a tumor of the spinal cord which is large enough to produce complete or partial spinal subarachnoid block. Consequently, on compressing the jugular veins, one interferes with the venous drainage of the brain, the intracranial veins are distended, and the intracranial pressure is increased and transmitted through the spinal fluid, causing downward dislocation of the tumor with traction or compression of the diseased root which results in pain.

Another characteristic of root pain is its onset at night during sleep and its subsequent relief on getting up and walking about. The spinal column tends to shorten during the day, owing to compression of the intervertebral disk by the weight of the body being carried in the upright position. In the horizontal position, during sleep, the spinal column gradually lengthens. Consequently a slight change in the relationship of the length of the spinal cord and its roots to the surrounding bony structure results. This stretches the nerve roots slightly. Often a patient with such night pain will say that he has learned to avoid or to alleviate the pain by sitting up in a chair to sleep. This characteristic of root pain is not so frequently observed as others but, when present, is of the utmost significance.

EXPERIMENTAL EVIDENCE

Since at least two of the concepts which I have mentioned are contrary to generally accepted theories, I shall mention clinical observations to support my contentions.

First, I have said that dilatation of veins in the epidural space, with coughing, sneezing and straining, dislocates the dura toward the spinal cord, stretches the enveloped nerve roots and thus produces pain. It has generally been assumed that such intensification of pain results from an increase in pressure of the spinal fluid. However, as I observed that jugular compression very rarely intensified root pain, unless the pain was due to a tumor of the spinal cord which produced dynamic subarachnoid block, I sought another explanation.

A young man who had pain along the distribution of the sciatic nerve which was intensified by placing the head forward on the thorax, by the Lasègue maneuver, by stooping forward and by coughing, sneezing and straining at stool was found to have a typical protrusion of the lumbosacral disk. Surgical removal of this disk relieved the pain. Three days prior to operation, two spinal puncture needles were inserted into the spinal subarachnoid space in the usual manner, one at the third and the other at the fourth lumbar interspace. A

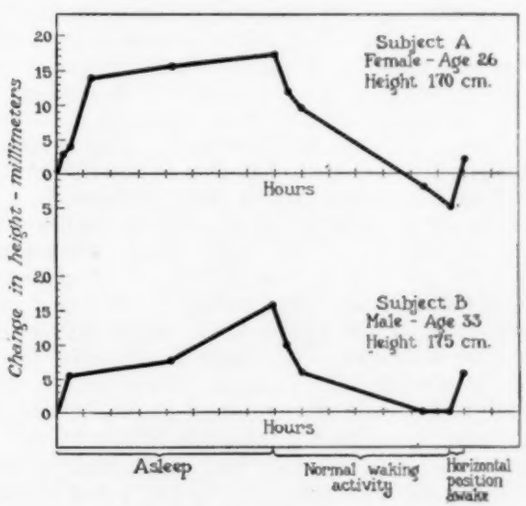

Fig. 4.—Variations in height of two subjects engaged in normal activities during a period of fifteen hours.

water manometer was attached to the needle at the higher level. Flexing the head forward on the thorax until the pain was intensified caused the spinal pressure to rise to 29 cm. from an initial pressure of 7.2 cm. of water. However, with the head in the rest position the pressure rose to 30 cm. on compression of the jugular veins without intensifying the sciatic pain. This demonstrated that the intensification was not due to the increase in intraspinal pressure itself. On coughing,

the spinal pressure rose to 16 cm. and the pain was intensified. When physiologic solution of sodium chloride was injected rapidly into the spinal subarachnoid space through the lower needle, the pressure was elevated to 25 cm. without intensifying the pain. The pressure was then lowered to 16 cm. by allowing fluid to escape through the lower needle, which was slowly withdrawn until the flow of fluid ceased. The tip of the needle was then in the epidural space. Forty cc. of physiologic solution of sodium chloride was then slowly injected into the epidural space. This greatly intensified the pain but raised the pressure of the spinal fluid to only 28 cm.

These observations support the theory that increasing the pressure of the spinal fluid alone does not intensify root pain. Increasing the size of the epidural space, with consequent displacement of the dura toward the spinal cord, is the factor responsible for intensification of the pain by virtue of traction on the diseased nerve roots.

Graphic proof of the fact that straining increases the size of the epidural space at the expense of the intradural space can be seen in figure 3. Figure 3 *a* shows the iodized oil filling the lower end of the caudal sac as the patient stands relaxed. Figure 3 *b* shows a roentgenogram that was made a few minutes later, while the patient strained vigorously in the upright position. Owing to increase in the size of the epidural space, the intradural diameter is decidedly narrowed and the shadow produced by the iodized oil becomes longer and narrower. Exactly the reverse would occur if increased intradural pressure played the predominant role; that is, the column of iodized oil would become shorter and broader. The arrow points to oil in the perineural spaces of a nerve root. In the original roentgenograms it can be readily seen that the nerve root is displaced medially with straining.

The intensification of root pain at night frequently has been attributed to nocturnal increase in intraspinal pressure. A more likely factor seemed related to the known fact that the spinal column is elongated when one lies down. For five successive days, two subjects were measured at night on retiring and in the morning on arising. Subject A, a woman 26 years old and approximately 170 cm. tall, showed an average gain of 20.2 mm. in height during sleep. Subject B, a man 33 years old and approximately 175 cm. tall, averaged an increase of 16 mm. in height. There was no variation in the height of the perineum in either subject.

Figure 4 represents the variations in height of the two subjects during fifteen hours while they engaged in similar activities. The general shape of the two curves is similar. Both gained height rather rapidly when first lying down and more gradually thereafter throughout the night. On arising in the morning, height is lost rapidly during the first hours and thereafter more gradually during the day. When a rest is secured by lying down later in the day, height is again gained rapidly.

Furthermore, roentgenograms of the thoracic and lumbar vertebrae of subject B, made at bedtime and immediately on arising after seven hours of sleep under otherwise identical conditions, showed that the increase in height was due to increase in height of the intervertebral disks. Comparison of the height of the intervertebral disks measured with calipers showed significant differences throughout the spinal column. For example, the third lumbar disk was almost 2 mm. higher in the morning.

REPORT OF CASES

In order to demonstrate the value of recognizing the root character of pain, I report 2 cases:

Case 1.—A man aged 36 was referred to the Section on Gastro-Enterology at the clinic because of a severe aching pain localized in a region about 6 cm. in diameter deep in the left upper part of the abdomen, under the costal margin. At the onset, two years previously, the pain had occurred about once a month and while the patient had been asleep. It had then become more frequent. In the months prior to his admission to the clinic it had occurred almost every night between 1 and 4 a. m. When the patient had got out of bed, stretched and walked about, the pain had been relieved in about fifteen minutes. If he then had returned to bed, it usually had recurred in from thirty to sixty minutes. He had found that sleeping in a chair prevented the pain. The pain had also occurred at times during the day, but never while he had been in the upright position and moving about. Coughing and sneezing had intensified the pain when it had been present but never had produced the pain.

The results of general neurologic examination were negative except for the finding that flexing the neck far forward, so that the chin rested on the thorax, reproduced the pain to a slight but definite degree. There was a narrow zone of hyperesthesia corresponding to the left seventh thoracic spinal segment. This zone was over the site of the spontaneous pain. There was tenderness on percussion over the fifth thoracic vertebra. Localized stereoscopic roentgenograms of the midthoracic portion of the spinal column did not disclose any abnormality. Lumbar puncture was performed but the results were negative except for a positive Nonne test for globulin and elevation of the concentration of total protein to 70 mg. per hundred cubic centimeters (the normal value is less than 45 mg. per hundred cubic centimeters). The Queckenstedt test was negative. Roentgenoscopic study of the spinal subarachnoid space after the injection of 5 cc. of iodized oil into the lumbar region revealed a defect interpreted as representing an intradural extramedullary tumor, 1 cm. in diameter, opposite the lower border of the body of the fifth thoracic vertebra. Subsequently a small neurofibroma of the seventh thoracic root on the left side was removed and the result was gratifying.

Case 2.—A man aged 48 had fallen a distance of 8 feet two years and four months before he came to the clinic. He had landed in a sitting position in such a way that a protruding iron rod had pierced the left side of his scrotum and left thigh. Two periods of hospitalization had been necessary to effect closure of the resulting sinuses. His claim for compensation had then been settled in lump sum. The patient had been unable to return to work, however, because of a severe pain in the lower part of his back which had extended down the posterior aspect of the left thigh and leg into the foot. He then had attempted to reopen his case before the industrial commission, believing that his disability was the result of his injury. The claim had not been allowed, since there was no roentgenographic evidence of lumbosacral injury. The patient then came to the clinic voluntarily to seek relief.

Roentgenograms of the spinal column showed some hypertrophic changes and narrowing of the lumbosacral space. The patient volunteered the information that coughing, sneezing, straining at stool and heavy lifting intensified the pain. Examination revealed that bending forward, straight leg raising, extension of the leg while the knee was flexed on the abdomen and bending the head far forward on the thorax intensified the pain.

Because of the definite root character of the pain, further investigation was carried out. Spinal puncture at the fourth lumbar interspace gave negative results except for showing a positive globulin test and elevation of the total protein to 100 mg. per hundred cubic centimeters. The suspicion of the presence of a protruded intervertebral disk at the lumbosacral junction was verified roentgenoscopically after 5 cc. of iodized oil had been injected into the spinal subarachnoid space. Subsequent removal of the protruded disk and hypertrophied ligamentum flavum dorsal to it was successful in relieving the pain.

SUMMARY

Pain resulting from disease of the sensory nerve roots secondary to extramedullary tumors of the spinal cord, protruded intervertebral disks and other spinal lesions is not uncommon. The pain occurs in the distribution of the nerve root involved and frequently is localized in a small part of the total region supplied by that nerve root.

Characteristically this pain is produced or intensified by (1) a sudden increase in intra-abdominal and intrathoracic pressure, such as occurs in coughing, sneezing, straining at stool or lifting, and (2) by stretching of the involved nerve roots, as in bending the head forward on the thorax, stooping forward with the knees straight, straight leg raising, the Lasègue maneuver, and by spontaneous elongation of the spinal column during sleep.

Clinical Notes, Suggestions and New Instruments

INTRACEREBRAL CLOT COMPLICATING ECLAMPSIA WITHOUT CONVULSIONS

SURGICAL REMOVAL OF CLOT WITH RECOVERY

WALTER D. ABBOTT, M.D., DES MOINES, IOWA

Eclampsia is a clinical entity which is not satisfactorily defined from either an etiologic or a pathologic point of view. Williams [1] states that eclampsia is an acute toxemia usually but not always accompanied by convulsions. However, De Lee [2] remarks that this condition is not a disease but merely a symptom of some underlying cause, and he further mentions that cerebral hemorrhages of varying size frequently occur in eclampsia with this finding present in 40 per cent of autopsy material. Slemons [3] in 1907 reviewed the literature to that date and Liebmann [4] in 1925 quoted Schmorl's definition of eclampsia as "degenerative kidney changes, particularly in the convoluted tubules where albumin and fatty alterations are observed: necrosis in the liver with thrombosis in the interlobular and intralobular vessels; degeneration in the heart, particularly in the muscles; hemorrhage and softening into the brain; and a widespread thrombosis in the internal organs."

Bell [5] more recently described a characteristic glomerular lesion of the kidney consisting of dilatation of the glomerulus and thickening of the capillary basement membrane with narrowing of the lumen of the capillaries. Of the 46 cases that have been reported, Slemons found the reports of 7 and added 2 more in 1907. The next review was that of Schmidt [6] in 1911 and brought the total to 24. Caffier [7] found 38 cases up to 1927 with 4 others that had to be discarded because of the incompleteness either of the history or of the autopsy. His paper brings the literature to that date. Since then, similar conditions have been reported by Liebmann, Pohl,[8] Bock [9] and Wronski.[10] Bock adds also the case of Berg and mentions 3 others as well as the case of Thalheimer, which cannot be included because of the lack of necropsy evidence. Knight [11] in 1925 added a case in which there was hemorrhage into the frontal lobe, and King [12] in 1933 reviewed the literature, bringing the total to 46 cases. However, only 30 are carefully analyzed in his report because of inadequate records. The age limit was from 18 to 43 years and the parity from primigravidity to tertiodeciparity, with a distribution of 19 primiparas and 11 multiparas. Antepartum cases numbered 14, the earliest of which was at three months, and 10 occurred during delivery and 6 during the puerperium.

These proportions are similar to those reported by Greenhill for the distribution of true eclampsia. Of these cases only 14 showed true premonitory signs. This amazingly low figure makes the seriousness of the situation all the more apparent. It is not impossible that symptoms would have been observed in the others had they been looked for, but this fact emphasizes again the necessity for the strictest watchfulness by those attending patients in confinement.

Headache was the most common symptom, followed by vomiting and edema. Visual disturbances occurred in only 7 instances and epigastric pain in 6 instances. Albumin in the urine was reported 15 times, and an elevation of temperature was observed in 15 cases. In 9 instances circulatory collapse was the first warning of anything abnormal, and in 8 cases unconsciousness with or without the cardiac signs ushered in the condition. The blood pressure records have not been carefully taken in all instances, particularly in the reports from Europe. The description of cerebral involvement has been inadequate, and Schmorl [13] describes bleeding into the brain as the significant part of the pathologic condition which has been confirmed by these various reports. However, the type of hemorrhage will vary from a petechial to a massive hemorrhage into the frontal or occipital lobe or into the internal capsule, and in 1 case into the pons. One not infrequently sees this hemorrhage occur in the absence of convulsions, and Benda [14] feels that the increased capillary permeability is due to the toxemia.

The 2 cases reported by Cronin and Knight [15] are the only ones apparently in which recovery from massive hemorrhage occurred, and in neither instance did the patient have convulsions. King states that in 9 cases exclusive of his report massive hemorrhage into one or the other part of the brain is reported. These are the reports of various authors cited in his extensive review of the literature. The fact that such a condition occurs sounds a warning note to prevent or at least attempt to combat such a condition when it does occur.

The following report is the only one in which surgical removal of the clot has been rewarded by recovery of the patient. This report comprises the record of a patient in the so-called intern training service—a low cost patient paying only a minimal hospital expense and being cared for by the intern in a teaching program. The patient was examined by the intern at frequent intervals during the antepartum stage under the direction of an attending obstetrician, and it is of note that the intern was alert in calling for adequate consultation, which proved the diagnosis in this case and led to prompt and efficient treatment.

REPORT OF CASE

Mrs. R. H., aged 19, had been seen at the antepartum clinic since October 1940 by Dr. Eugene Penn. This was her first pregnancy and each time she visited the clinic her condition was satisfactory until March 10, 1941, at which time it was noted that she had gained 9½ pounds (4,300 Gm.) in the previous week, that her blood pressure had risen from 120 systolic and 80 diastolic to 130 systolic and 100 diastolic and that the urine contained a considerable amount of albumin. The patient stated that for four days she had suffered from a severe head-

From the Department of Neurosurgery, Iowa Methodist Hospital.

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14. Benda, R.: Zentralbl. f. Gynäk. **50:** 727 (March 20) 1926.
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ache accompanied by spots before her eyes and that there was some swelling of her feet and legs. On March 13 she entered the hospital complaining of headache in the occipital region and was in labor that lasted for ten hours. She was seen in consultation by Dr. A. W. Brown; light ether anesthesia was administered and delivery of a normal boy weighing 8 pounds (3,630 Gm.) was effected by low forceps delivery. She was given 2 cc. of 50 per cent magnesium sulfate intramuscularly and 500 cc. of 20 per cent dextrose intravenously. After the anesthesia the patient remained stuporous, pale, cold and clammy. The pulse rate ranged from 120 to 140 a minute and the respiratory rate from 28 to 30 a minute; the blood pressure remained at 140 systolic and 102 diastolic.

At no time did she show any evidence of a convulsion. However, her pupils were dilated and did not react to light, and there was a homonymous hemianopia to the left with a slow horizontal nystagmus. Ophthalmologic examination by Dr. J. A. Downing revealed a 5 diopter choked disk on the right, 3 diopters on the left with the left homonymous hemianopia.

Roentgenograms of the skull were negative and neurologic examination was negative except for the profound stupor. The temperature remained at 101 F., and the blood pressure at 140 systolic and 102 diastolic. The pulse rate was 60 a minute and the respiratory rate was 14 a minute. Examination of the urine revealed an acid reaction, the specific gravity was 1.024, albumin was 6.5 Gm., there were occasional pus cells and the blood urea nitrogen was 28 mg. per hundred cubic centimeters. Examination of the blood otherwise was negative, as was the Wassermann reaction.

Hypertonic dextrose was administered daily by venoclysis. A diagnosis of a lesion of the right occipital lobe was made and I felt that it was questionable whether this was the result of an intracerebral hemorrhage or a preexisting glioma with hemorrhage into the tumor, and two days later under anesthesia of avertin with amylene hydrate ventricular studies were attempted. Perforator openings were made over the occipital regions of the skull and when a trocar was passed into the right occipital lobe resistance was met at a depth of 3 cm. Aspirations from the trocar resulted in the removal of clots of old blood. A trocar was then passed into the left lateral ventricle and clear fluid escaped under pressure. A total of 60 cc. of fluid was replaced with an equal amount of air, and roentgenograms revealed a shifting of the ventricular system to the left and a failure of filling of the posterior horn of the right lateral ventricle. An osteoplastic flap was then turned over the right occipital area and the brain was found to be under a significant increase of pressure with a flattening of the convolutions of the occipital lobe. The cortex was incised and a blood clot weighing 8 Gm. was removed.

After removal of this clot there was bleeding from the small branch of the posterior cerebral artery, which was controlled with electric coagulation. A sample of tissue taken from the surrounding area was examined by Dr. R. F. Birge, who stated that there was no evidence of tumor. The patient made a satisfactory recovery and on June 6 stated that she felt no symptoms except an inability to see to the left. Her vision was 20/20 in the right eye and 20/25 in the left eye, and the choked disks had completely receded. However, there is a residual homonymous hemianopia on the left side. The blood pressure was 120 systolic and 80 diastolic and urinalysis was negative with blood urea nitrogen 14 mg.

SUMMARY

A young woman's life was spared by alert care and adequate consultation. It would have been logical to assume that her drowsy state was the result of toxemia. However, with the presence of papilledema and hemianopia, the presence of an organic lesion was obvious.

The presence of syphilis and of arteriosclerosis were eliminated; therefore, the most plausible explanation for the hemorrhage was increased capillary permeability exacerbated by a toxic state and the sudden rise in blood pressure.

This case is reported in the hope that all patients in an eclamptic state, with or without convulsions, will receive the benefit of adequate ophthalmologic and neurologic consultation so that, if similar circumstances occur, lives may be saved by prompt treatment.

1422 Des Moines Building.

A TRUSS FOR INGUINAL HERNIA IN INFANTS

W. J. POTTS, M.D., OAK PARK, ILL.

Surgical repair of inguinal hernia in children under 2 years of age is rarely indicated except in emergencies. The mother is averse to surgery and the surgeon hesitates to operate because some hernias, especially in very young infants, disappear spontaneously. As long as the child has not been trained the danger of a postoperative infection, while not great with proper precautions, nevertheless exists and adds to the hazard of surgical repair. To prevent incarceration and to aid nature in the spontaneous closure of the peritoneal pouch, a proper truss must be adjusted. The requirements of a truss for infants are specific. It must remain in place and must retain the hernia even when the child is coughing or crying. It must be comfortable, nonirritating, sanitary and simple to apply correctly. The cost should be minimal in a large charity outpatient department where a large number is required.

A truss meeting these requirements has been used in the outpatient department of the Children's Memorial Hospital of Chicago for the past two years on approximately 50 infants.

The pad is of ordinary white outing flannel. Two triangular pieces of cloth measuring 3 inches from corner to corner are

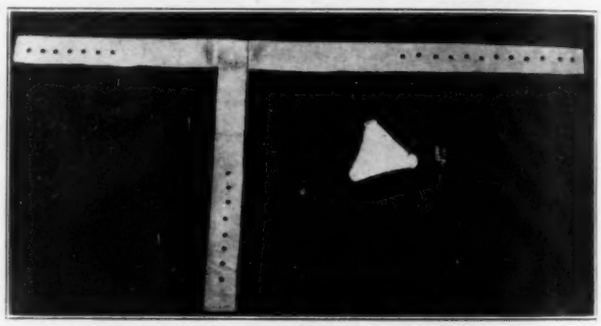

Fig. 1.—Truss and binder ready for use.

sewed together except for a small space on one side. The pocket thus made is turned inside out to bring the seams inside and is stuffed tightly with cotton. The seam is completed and a small button is sewed to each corner (fig. 1). The finished pad measures approximately 2 inches from corner to corner.

The binder is made of two strips of pure gum rubber ⅞ inch wide and about 1/20 inch thick; one is 18 inches long and the other 9 inches long. The 9 inch strip of rubber is cemented to the 18 inch strip 6 inches from either end. The long strip goes around the abdomen, the short one across the perineum. From six to eight holes 1/16 inch in diameter and ½ inch apart are punched in each end of the long strip, and from four to six similar holes are punched in the perineal strip. The binder can be used on either side merely by reversing it. The truss is now ready for application (fig. 2).

The rubber strips will be too long for small infants and can be cut to fit, allowance always being made for the growth of the child. The truss should be applied snugly enough to keep the hernia reduced but not so snugly that it pinches the skin. Unless the child has an unusually large hernial ring, very little pressure is necessary to accomplish this. After the truss has been applied the child is made to cry to test the effectiveness of the pressure on the pad.

The mother is instructed to make a number of pads, using the one given her as a model. A fresh pad can be applied as often as is necessary for cleanliness. The soiled pads are

From the Children's Memorial Hospital, Chicago.

washed with soap and water and are dried for future use. Each morning when the baby is bathed (if it is bathed) the binder may be removed, washed and powdered. However, if the baby cries during its bath it is well to leave the truss on and put on a dry pad after the bath is concluded. It is important that the hernia be kept reduced always, or closure

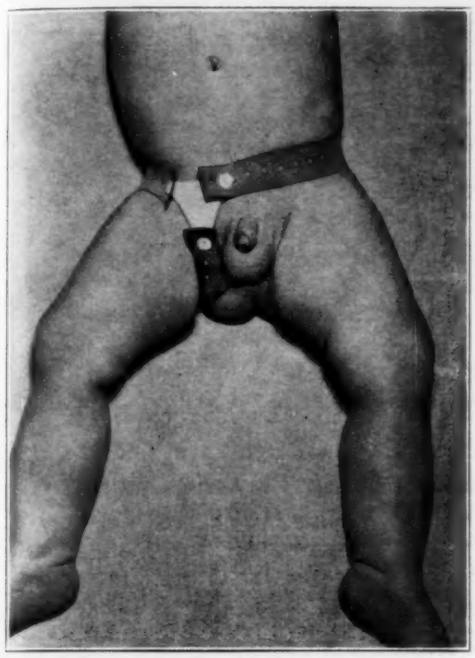

Fig. 2.—Truss in place.

will not be accomplished. Plenty of powder on the skin beneath the rubber will prevent irritation of the skin. Thus far I have seen only 1 child whose skin was sensitive to rubber.

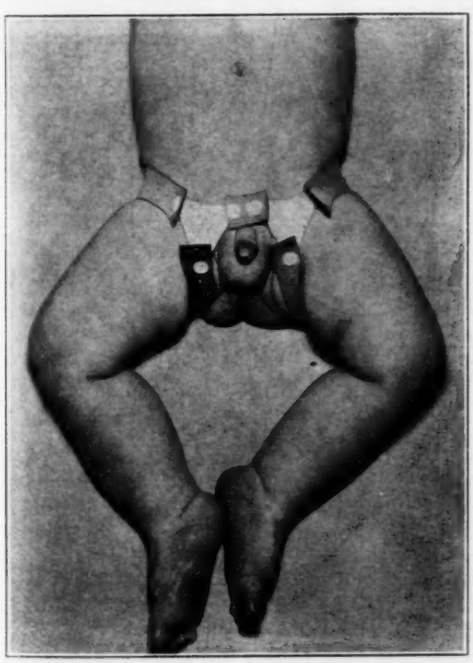

Fig. 3.—Modification of truss for an infant with a bilateral inguinal hernia.

For the occasional child with a bilateral inguinal hernia a binder with a double perineal strap and two pads adjusted as illustrated in figure 3 can be applied.

The cost of these trusses is approximately 4 cents apiece. The rubber lasts from four to six months.

715 Lake Street.

Council on Physical Therapy

CHAPTER VIII. THE MANUFACTURE OF ARTIFICIAL LIMBS

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING CHAPTER, WHICH IS THE TENTH AND LAST OF A SERIES ON AMPUTATIONS AND ARTIFICIAL LIMBS TO APPEAR IN THIS COLUMN. WHEN COMPLETED, THE SERIES WILL BE PUBLISHED IN THE FORM OF A HANDBOOK ON AMPUTATIONS. THE COUNCIL WISHES TO EXPRESS ITS APPRECIATION FOR THE COOPERATION OF ITS GROUP OF CONSULTANTS ON ARTIFICIAL LIMBS. THE COUNCIL IS REPRESENTED BY DRS. FRANK D. DICKSON, HARRY E. MOCK, FRANK R. OBER, S. PERRY ROGERS, PAUL STEELE AND PHILIP WILSON, AND THE ASSOCIATION OF LIMB MANUFACTURERS OF AMERICA IS REPRESENTED BY MESSRS. MCCARTHY HANGER SR., W. E. ISLE, JOSEPH A. SPIEVAK, DAVID E. STOLPE AND J. B. KORRADY.

HOWARD A. CARTER, Secretary.

1. THE INDUSTRY

The manufacturer of artificial limbs combines a profession with a trade and a business. The measurement, fitting and adjustment of a prosthesis, the choice of material, the distribution of weight, the alinement and balance necessary for optimal function and appearance certainly constitute a profession; in the best hands they are an art. The actual construction of a finished appliance from its basic raw materials constitutes a skilled trade; in the aggregate, an industry. Yet the manufacturer's income depends on the successful operation of a retail business, with salesmen on the street,

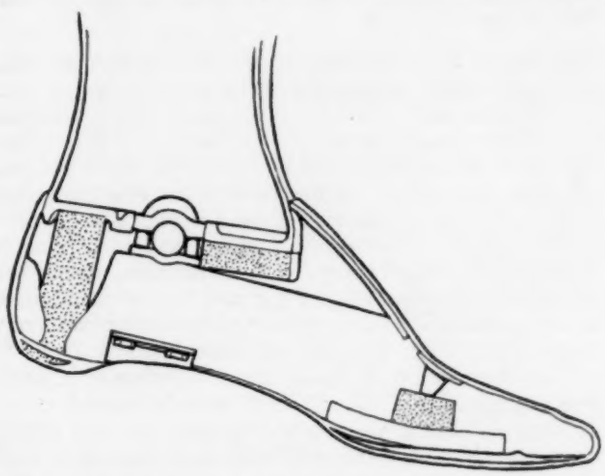

Fig. 1.—Wooden foot, toe joint of rubber belting, U-bolt ankle with bronze bushing, rubber bumpers.

a store for the reception of customers and a set of books which balance in the black. No standardization of the finished product is possible; most sales are individual sales, and every product is individually tailored to a particular patient.

Historically, the limb manufacturer combined all of these phases of his work in his own person. In addition to being his own salesman and fitter, he cured his own wood, hammered out his own joints at his forge and worked his own leather and wood and metal into a finished limb. Frequently he was his own first customer. The founders of a number of our largest manufacturing firms were men who had lost limbs in the early days of American railroading or in the war between the states. The industry is still distinguished by the fact that considerably more than half of all the persons engaged in all its branches are themselves wearers of artificial limbs.

As the industry grew up it underwent a degree of specialization and consolidation. Aluminum alloys,

special steels, fiber, leather and rawhide, webbing, rubber, ball and roller bearings and other basic materials are purchased from other industries. The growth and seasoning of willow wood has been centralized, as has the knitting of stump socks of wool and cotton. The manufacture of standard types of steel joints and the preliminary shaping of aluminum alloy tubes have been segregated into a few units. The patenting of mechanical features has led to centralization of the manufacture of such parts by the patent holder or his licensees. Thus there are parts manufacturers, accessory manufacturers and supply houses selling a greater or lesser proportion of the finished product to the ultimate manufacturer of the individual limb. The larger manufacturing concerns, who have many retail branches, may manufacture more of their basic parts and accessories, but every branch must still perform the three basic functions of the individual limb maker: make the sale, measure the stump, fit the limb, alter it if necessary, service it as required, and show a profit as a business. While limb manufacture in England and in continental Europe has tended toward standardization, it has here remained highly individualistic and highly competitive; the personal skill and ingenuity of the individual manufacturer and fitter are still indispensable.

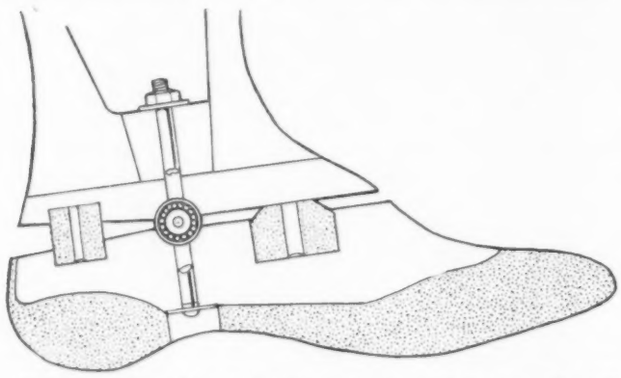

Fig. 2.—Sponge rubber foot with wood core, eye-bolt type ankle with quadruple ball bearings, limited ankle motion controlled by rubber bumpers.

The Association of Limb Manufacturers of America was organized in 1917. Prior to this the manufacturers of artificial limbs were not organized as an industry except as business men affiliated with boards of trade and other associations composed of a variety of different industries. At the behest of the United States government the artificial limb industry undertook the formation of an organization to promote better understanding among the members and, by the interchange of ideas, to facilitate improvements and refinements in artificial limbs and to establish standards for ethical conduct and sound business practice. The Association of Limb Manufacturers of America has increased in membership and strength until today it represents the major part of the industry and embraces the entire United States and part of Canada. The business of the association is administered by a board of directors, and local groups are organized into regional councils in various centers throughout the United States. A monthly magazine called the *ALMAnac* disseminates information of interest to the members as well as technical articles relating to the construction and fitting of artificial limbs, new products and devices.

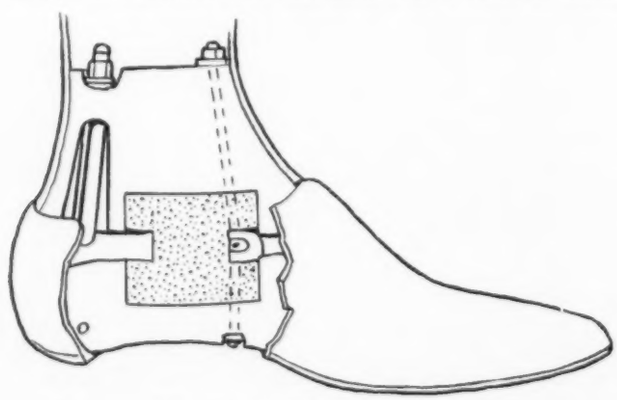

Fig. 3.—All rubber ankle joint permitting lateral motion.

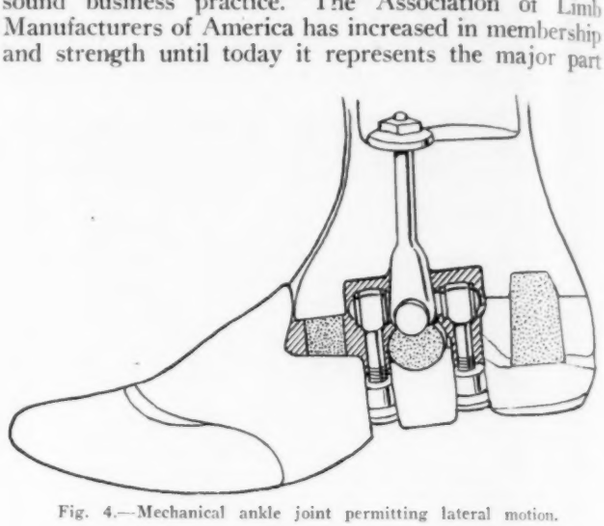

Fig. 4.—Mechanical ankle joint permitting lateral motion.

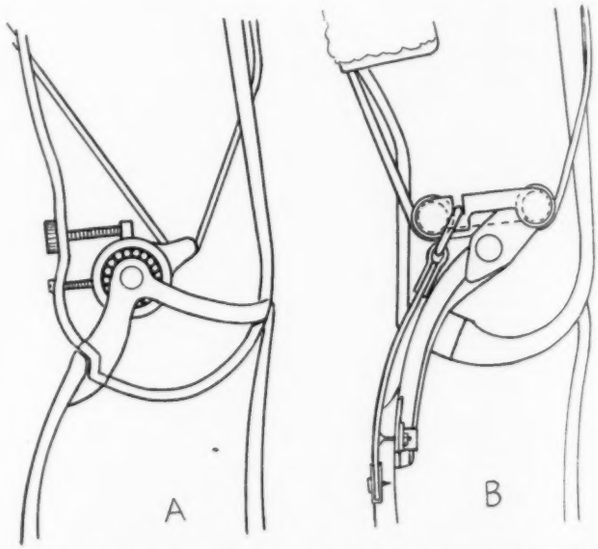

Fig. 5.—Inside knee control: *A*, single roller type; *B*, double roller type.

2. MATERIALS

The major portions of a modern artificial limb are constructed of one of three materials: wood, fiber or aluminum alloy.

Willow and bass (linn) are the woods usually chosen for their qualities of lightness, flexibility and strength. For the construction of legs, thighs and sockets, blocks of suitable size, free from sap, rot or large knots, are chosen, hollowed through the center and carefully seasoned for several years. Sockets are shaped on the inside to fit the stump accurately, with due allowance for scars and other tender points. Shin pieces and

thigh pieces are shaped on the outside to conform to the size and shape of the normal extremity and then cut out on the inside so as to leave a shell of the thickness demanded for strength, usually between ¼ and ⅜ inch. Brass screw wire may be threaded through and across the grain to add strength, and the whole is covered with one or two layers of rawhide, shrunk on tightly and cemented to the wood. Joints are riveted into place, and the necessary controlling harness is attached. The inner and outer surfaces are lacquered or enameled to make them resistant to moisture and perspiration.

Fig. 6.—Automatic knee lock.

Wood as a material for artificial limbs has a number of undeniable virtues. It is light, clean, cool, strong and odorless. Its thickness, and therefore both its weight and its strength, are readily adaptable to the functional needs of the individual patient. It is less flexible than fiber, but more flexible than metal. It is relatively impervious to weather and to corrosion by perspiration or chemicals. It withstands sudden and repeated shocks well, and it does not dent. It can be repaired with relatively simple tools. It is probably still the choice for the heavy man doing manual labor and likely to take the minimum of care of his appliance.

Fiber is essentially paper chemically treated and vulcanized into sheets. That used for artificial limbs is made especially for the purpose and is approximately 1/64 inch thick. It is cut and pressed into appropriate shapes and riveted together. It is light, extremely flexible, and will not dent. Its riveted construction permits sockets to be taken in or let out and allows some repairs to be made with a minimum of skill or equipment. A finished limb is no lighter than one of wood or metal. Its durability and its resistance to shock, dampness and corrosion are not so good.

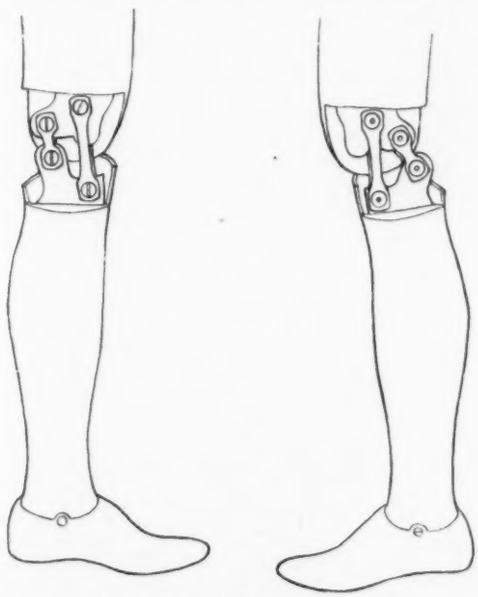

Fig. 7.—Polycentric knee mechanism.

The manufacture of all-metal limbs, begun about 1918 with the use of duraluminum or "airplane metal," has increased steadily. The metal used consists of one of the "heat-treated" alloys, of which there are now several, each possessing slightly different physical properties. Formerly shaped from sheets of 16-18 gage and riveted or welded, the parts are now generally worked from spun tubes, by eccentric spinning, by hydraulic pressure within an outside mold or by outside pressure over an inside mold. The alloys available and the methods of working them have both improved steadily. Sockets of wood, leather, plastic or aluminum are inserted. The metal socket may be adjusted by cutting and rewelding. Steel joints, incorporating bronze bushings and roller or ball bearings are riveted or pressed into place. Standard feet and the usual harness are added, and a flesh-colored enamel may be applied.

Metal limbs may be made lighter than the average wooden limb. In general, the higher the amputation the greater the weight advantage in metal. Breakage is less common with modern construction. A sharp blow, however, will produce a dent in the metal surface, often difficult to remove. The tendency to noise has been minimized by the substitution of pressed sleeves and welds for rivets. Their repair requires special skill and equipment. In general they are preferred for persons who do not regularly engage in hard physical work and who are likely to take reasonable care of their prostheses.

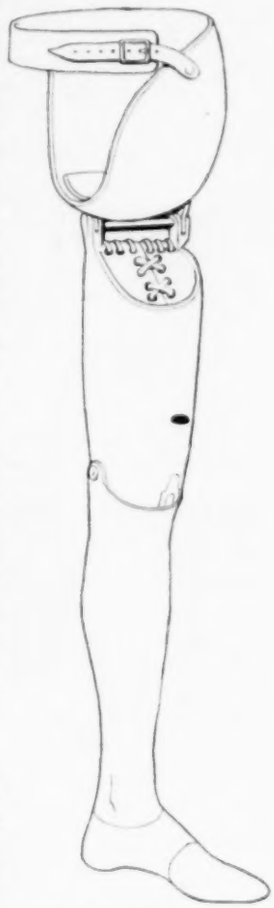

Fig. 8.—Tilting-table leg.

3. CONSTRUCTION

A. *Feet.*—In the construction of a wooden foot a block of wood is worked down to conform to the size and shape of the normal foot, usually with the aid of a shoe supplied by the patient. The block is recessed to accommodate an ankle joint mechanism. Provision is made for flexibility at the ball of the foot either by the use of a joint at this point or by construction of the entire forefoot from rubber or felt. A pad of gum rubber is placed beneath the heel. The wood portion may be covered with rawhide and the sole, or even the entire foot, with soft leather (fig. 1).

Other feet are constructed principally of either rubber or felt, with a core of wood only sufficient to retain the ankle joint mechanism. With flexibility of the entire foot provided by the choice of basic material, a joint at the forefoot is eliminated and the range of motion required at the ankle joint proper is less (fig. 2).

B. *Ankle Joints.*—Feet made of rubber or felt and solidly attached to the leg have been used, but most manufacturers now provide limited ankle motion through some kind of joint. The usual joint construction consists of a transverse steel cylinder attached to the leg, resting in a semicylindric leather bushing in

the foot and held to the foot by either a U-bolt or an eye-bolt. The U-bolt is generally provided with a semicircular bronze bushing, whereas variations of the eye-bolt principle commonly utilize ball or roller bearings. Compound joints designed to spare the stump by allowing lateral motion of the foot on uneven surfaces have been experimented with for many years but have never been generally accepted. Two attempts to accomplish this end have, however, been just recently introduced, one consisting essentially of a square block of rubber mounted firmly to both foot and leg and controlled by toe and heel cords (fig. 3), the other a compound mechanical joint mounted in rubber bumpers (fig. 4).

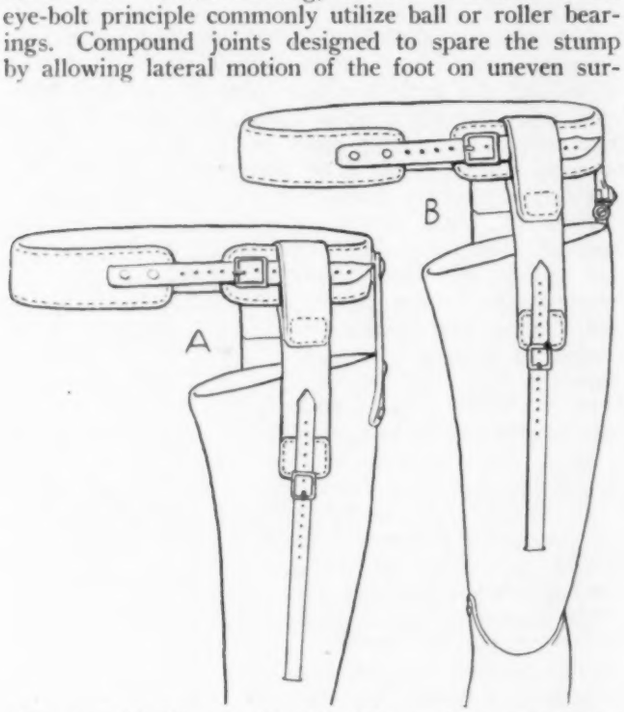

Fig. 9.—Pelvic belt: *A*, with single joint permitting motion in one plane; *B*, with compound joint permitting motion in two planes.

C. *Knee Joints.*—Side joints for below knee amputations are essentially long, flat steel bars, integrated through either bronze bushings or ball bearings and provided with a simple stop to prevent hyperextension. Knee bearing, through knee and transcondylar amputations require side joints of considerably greater strength.

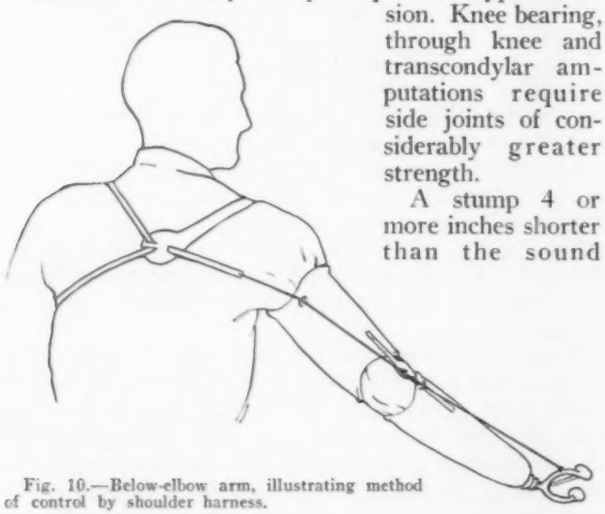

Fig. 10.—Below-elbow arm, illustrating method of control by shoulder harness.

A stump 4 or more inches shorter than the sound thigh (2½ to 3 inches above the center of knee motion) allows room for any one of a variety of knee mechanisms built around a transverse steel spindle set in bearings at either side of the thigh piece. The same suspenders used to carry the weight of the prosthesis, falling in front or in back of the thigh, may be passed over eccentric rollers mounted on the central spindle in such a way as to actuate and control the swing of the shin piece in a manner simulating the natural gait (fig. 5).

Stability of an artificial knee joint, i. e. assurance against its "jack-knifing" from under the patient, may be provided in a number of ways. A positive lock, controlled by a rod passing down the outer side of the thigh, provides absolute stability in walking and may be unlocked for sitting, but it naturally requires an awkward, stiff-legged gait. A recently invented knee-lock, actuated by a rod from the forefoot, automatically locks when the weight is placed on the heel and unlocks when the weight is placed on the ball of the foot (fig. 6). Setting a freely movable joint so as to allow some hyperextension assures stability but produces a slow, awkward gait. Increasing the "fixed equinus" of the ankle, by raising the front bumper in the foot, stabilizes the knee through most of the gait, but this maneuver increases the length of the arc which must be swung through each step, and it transmits a shock through the socket which cannot be tolerated by short or sensitive stumps. The standard practice of setting the transverse axis of knee motion well behind the center of the thigh adds stability while increasing the length of the knee-toe arc to a less extent. Several ingenious polycentric mechanisms prohibit flexion of the knee while weight is borne on the limb, allow a greater range of flexion, and materially shorten the knee-toe arc when the knee is flexed (fig. 7).

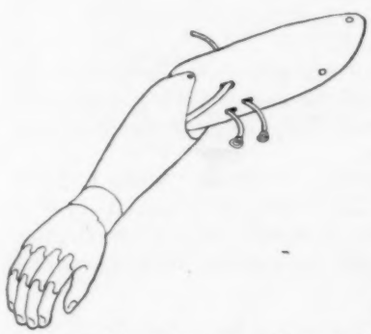

Fig. 11.—Above-elbow arm, with mechanical hand and automatic control of rotation of the wrist.

Fig. 12.—Mechanical hand with digits that are formed of spiral spring steel.

D. *Hip Joints.*—Disarticulation and very short thigh stumps may have to be fitted with what is called a "tilting table" limb (fig. 8). The buttock sits in a bucket securely strapped to the pelvis, motions of which are used to swing the limb. A pair of joints, mounted just under the bucket, are locked for standing and walking and unlocked for sitting. Pelvic belts have been added to thigh limbs for years to increase their stability, especially with short stumps. Recent manufacturing practice has shown an increased use of pelvic belts with hip joints to replace shoulder harness entirely (fig. 9 *A*). Some of these devices permit motion in the same plane at two points. Others permit motion in two planes (fig. 9 *B*).

E. *Arms.*—Artificial arms are attached and controlled by means of harness passing about the chest and about the opposite shoulder (fig. 10). Elbow joints allow only axial motion. Rotation of the hand is accomplished by a rotary joint at the wrist, usually turned and locked by the other hand but sometimes integrated with motion of the elbow (fig. 11). With long forearm

stumps, flat enough to impart rotary motion to a socket, leather straps are substituted for metal joints between the forearm and arm corsets.

F. *Hands.*—Artificial hands made of molded rubber, felt or wood may be worn principally for appearance.

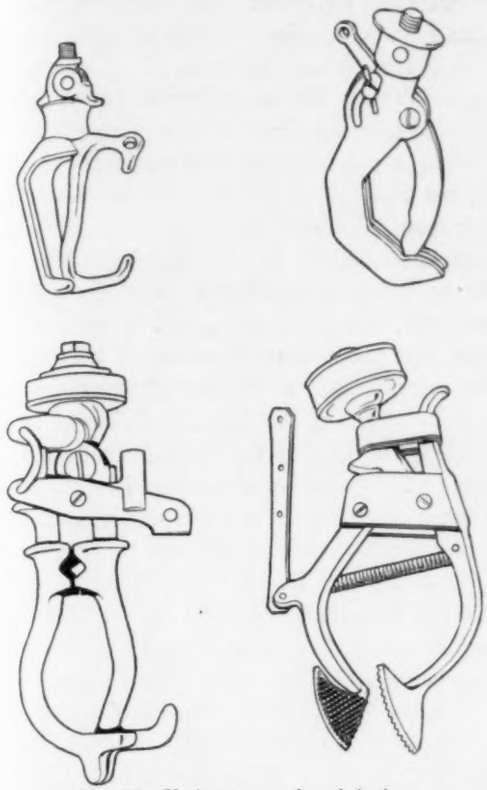

Fig. 13.—Various types of work hooks.

Mechanical hands are made of metal, wood or rubber reinforced with metal. Either the thumb or the fingers or both may be jointed. Fingers may be jointed at one, two or three points. In one type of mechanical hand the fingers and thumb are constructed of spiral spring steel wire which forms the flexible shape of fingers, inside of which are simple jointed steel rods, this construction being less costly and quite as effective as forming the fingers and joints of wood or other material (fig. 12). Control cords arise from a loop about the opposite shoulder, so that the natural motion of extension of the stump within its socket serves to pull on the cord. Hands may be closed by mechanical spring action and opened by the control cord, or vice versa. A locking device may be incorporated in either type. A glove is usually worn on the mechanical hand. A variety of mechanical appliances are available as substitutes for any mechanical hand. Mechanical hooks, rings and vises are more or less standardized, although any special tool may be so applied (fig. 13). A uniform method of attachment at the wrist may allow quick attachment of an artificial hand, a mechanical hand or any type of mechanical appliance to the same arm (fig. 14).

Fig. 14.—Interchangeable hand and hook.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

THEODORE G. KLUMPP, M.D., Secretary.

DEXTROSE (See New and Nonofficial Remedies, 1941, p. 179).

Endo Products, Inc., Richmond Hill, N. Y.

Ampoules Dextrose 50%, 20 cc.: Each ampoule contains 20 cc. of a solution containing 10 Gm. of dextrose-U. S. P.
Ampoules Dextrose 50%, 50 cc.: Each ampoule contains 50 cc. of a solution containing 25 Gm. of dextrose-U. S. P.
Ampoules Dextrose 50%, 100 cc.: Each ampoule contains 100 cc. of a solution containing 50 Gm. of dextrose-U. S. P.

DIPHTHERIA TOXOID (See New and Nonofficial Remedies, 1941, p. 462).

The National Drug Company, Philadelphia.

Diphtheria Toxoid (Plain).—(See New and Nonofficial Remedies, 1941, p. 463): For the three dose method of treatment, the following forms are marketed: packages of one immunization treatment, consisting of one 3 cc. ampul-vial containing three doses; packages of five immunization treatments, consisting of one 15 cc. ampul-vial containing fifteen doses. Contains merthiolate 1: 10,000 as a preservative.

SOLUTION LIVER EXTRACT PURIFIED-LILLY (See New and Nonofficial Remedies, 1941, p. 340).

The following dosage forms have been accepted:

Ampoules Solution Liver Extract Purified-Lilly, 10 U. S. P. Injectable Units Per cc., 10 cc.: Marketed in 10 cc. rubber stoppered ampoules.
Ampoules Solution Liver Extract Purified-Lilly, 5 U. S. P. Injectable Units Per cc., 10 cc.: Marketed in 10 cc. rubber stoppered ampoules.

SULFATHIAZOLE (See New and Nonofficial Remedies, 1941, p. 514).

The following dosage form has been accepted:

Tablets Sulfathiazole-Merrell, 0.5 Gm. (7.7 grains).
Prepared by the Wm. S. Merrell Co., Cincinnati.

SODIUM *r*-LACTATE ONE-SIXTH MOLAR.—A solution of sodium *r*-lactate one-sixth molar.

Actions and Uses.—Sodium *r*-lactate one-sixth molar is approximately isotonic with the blood and is used in the treatment of acidosis (as such or combined with Ringer's solution) and for the purpose of alkalizing the urine (for instance, in the treatment of acute urinary tract infections with sulfanilamide, in the treatment of transfusion reactions with hemoglobinuria).

Dosage.—Administered subcutaneously or intravenously. Intravenous solutions should not be administered at a rate greater than 300 cc. per hour (approximately 60 drops per minute) except on specific order of the physician. It can be calculated that each 60 cc. of one-sixth molar sodium *r*-lactate per kilogram of body weight may increase the sodium ion concentration of the blood plasma about 14 millimols (mM) per liter. This corresponds to a rise in bicarbonate concentration sufficient to yield an additional 33 volumes of carbon dioxide per hundred cubic centimeters of blood plasma.

Sodium *r*-lactate solution occurs as a clear, colorless, odorless liquid, possessing a slightly saline taste. The *p*H of the solution, when determined with a glass electrode, is between 4.8 and 6.0. Moisten a clean platinum wire with the solution and hold in a nonluminous flame: an intense yellow color is imparted to the flame. To 5 cc. of sodium *r*-lactate solution add 1 cc. of diluted sulfuric acid and 1 cc. of potassium permanganate solution and heat: acetaldehyde is evolved. To a 5 cc. portion of sodium *r*-lactate solution add 1 cc. of diluted nitric acid and 1 cc. of silver nitrate solution: no turbidity or precipitate occurs. Ten cc. samples of sodium *r*-lactate solution yield negative tests for arsenic and heavy metals when tested according to the U. S. P. XI methods.

A 50 cc. sample of sodium *r*-lactate solution remains colorless after the addition of 3 drops of phenolphthalein solution, and between 1.5 and 2.5 cc. of tenth-normal alkali is necessary to turn the solution pink.

Transfer exactly 10 cc. of sodium *r*-lactate solution to a platinum crucible and evaporate to dryness. Heat the residue gently and then gradually raise the temperature until the salt is carbonized, but do not exceed a dull red heat. Cool the mass and moisten with a drop of distilled water. Again heat to dull redness and repeat the procedure until the residue is white. Transfer the cooled crucible and its contents to a beaker and dissolve the residue in 50 cc. of water. Titrate with tenth-normal acid, using methyl orange as indicator: not more than 17.2 nor less than 16.5 cc. of tenth-normal acid is required. Transfer a 20 cc. sample of sodium *r*-lactate solution to a tared platinum dish and add 3 cc. of sulfuric acid. Evaporate to dryness and incinerate at 650 C. for one hour: the weight of the residue is not less than 0.230 Gm. nor more than 0.242 Gm.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, OCTOBER 25, 1941

CLINICAL STUDIES ON A NEW INFLUENZA VACCINE

Additional clinical evidence is now available concerning the prophylactic value of influenza vaccines. Two influenza A vaccines have been tested by Martin and Eaton [1] of the State Department of Public Health, Berkeley, Calif.: (*a*) a living vaccine prepared by growing influenza A virus in minced chick embryo suspended in saline solution and (*b*) a complex nonviable vaccine prepared from chick embryos inoculated with both the PR 8 strain of influenza A virus and the virus of the X strain of canine distemper treated with formaldehyde and prepared according to the technic proposed by Horsfall, Lennette and Rickard.[2] Both vaccines were given as a single subcutaneous dose, the inoculation occurring about two weeks before an outbreak of acute febrile respiratory disease clinically and serologically diagnosed as influenza A.

In one California institution 416 persons were vaccinated, and there were 4,560 nonvaccinated controls. At a second institution there were 413 vaccinations with 2,487 controls. In the two institutions approximately equal numbers were given the viable monovalent vaccine and the bivalent vaccine of Horsfall, Lennette and Rickard. Briefly summarized, 56 of the 829 vaccinated persons contracted influenza, a morbidity incidence of 6.75 per cent. Among the 7,047 nonvaccinated controls there were 750 cases of influenza, a morbidity incidence of 10.65 per cent. Detailed analyses showed that the two vaccines were equally effective, the Horsfall bivalent vaccine giving slightly better results in one institution, while in the second institution the monovalent vaccine was slightly more effective.

Now Horsfall and his colleagues [3] report another clinical study on a considerable scale. About a year ago their complex influenza A and canine distemper vaccine was given as a single subcutaneous injection to volunteers in fifteen institutions in Florida and Alabama. The number of persons vaccinated was 7,907 and the number in the same institutions not vaccinated was 9,688. About four months after the vaccine had been given, epidemics of influenza occurred in ten of these institutions. All cases of influenza which occurred in either the vaccinated or control individuals were recorded. Serum obtained from many of the patients during the acute phase of the disease and again during the convalescent period was subjected to complement fixation and other tests in order to establish a diagnosis in each instance. In the ten institutions there were 1,450 cases of influenza. An etiologic diagnosis could be established in 66⅔ per cent of these cases, while in the remaining cases either one or both serum specimens were unavailable. It was possible, therefore, to calculate with reasonable accuracy the proportion of cases of influenza A in both the vaccinated and the control groups, the recognition being given to the fact that influenza A is only one etiologic variety of the clinical syndrome termed influenza. Since the vaccine used in this study did not contain influenza B virus it was expected that it would not produce an antibody response against influenza B, and this was indeed found to be the case. The incidence of influenza A was 50 per cent lower among the vaccinated groups than among the unvaccinated groups who were living under identical environmental circumstances. Furthermore, the incidence of influenza of unknown cause (presumably not influenza A) showed no significant differences between the vaccinated and the control groups.

The results of this study would indicate, these investigators believe, that the single subcutaneous injection of the complex vaccine against influenza A significantly reduces the incidence of influenza A in the vaccinated group as compared with the control group. Since the complex vaccine used in this study contained inactivated virus, it seems probable that it served only to stimulate the production of antibodies and not to alter other factors which may contribute to a state of relative immunity to influenza A. It is likely, therefore, that the increased clinical immunity observed was attributable to the increased antibody levels possessed by the vaccinated institutional inmates.

Previous investigators [4] have reported evidence of a slight protection against influenza in persons inoculated subcutaneously with the living virus but have not found evidence [5] of an active immunity following control vaccination with the non-living (formaldehyde treated) vaccine. However, the evidence now available from the California and the Rockefeller Institute investigators would lead to the conclusion that this complex nonviable vaccine as developed by Horsfall and his co-workers is as effective a prophylactic agent as the

1. Martin, W. P., and Eaton, M. D.: Proc. Soc. Exper. Biol. & Med. **47**: 405 (June) 1941.
2. Horsfall, F. L., Jr.: Lennette, E. H., and Rickard, E. R.: J. Exper. Med. **73**: 335 (March) 1941.
3. Horsfall, F. L., Jr.; Lennette, E. H.; Rickard, E. R., and Hirst, G. K.: Pub. Health Rep. **56**: 1863 (Sept. 19) 1941.
4. Francis, Thomas, Jr., and Magill, T. P.: J. Exper. Med. **65**: 251 (Feb.) 1937. Stokes, Joseph, Jr.; Chenoweth, Alice D.; Waltz, A. D.; Gladen, R. G., and Shaw, Dorothy: J. Clin. Investigation **16**: 237 (March) 1937.
5. Special Research Council, Special Report No. 228, 1938, p. 141. Taylor, R. M., and Dreguss, Miklós: Am. J. Hyg., sect. B **31**: 31 (Jan.) 1940.

living virus. Certainly the results obtained by these two groups of investigators based on controlled clinical studies offer the most encouraging evidence of practical applicability of influenza vaccination which has so far appeared in the literature.

SHOTGUN VITAMINS RAMPANT

When Lever Brothers, manufacturers of various soaps and other products, recently announced its entrance into the vitamin field, it joined the vitamin gold rush of 1941, making the California trek of 1848 pale by comparison. There are lush profits in the vitamin business.[1] Enterprising manufacturers of all kinds are climbing on the wagons and taking to the trail. The Vick Chemical Company saw the boom developing; it acquired "Vitamins Plus," against which the Federal Trade Commission moved a year ago. According to the Federal Trade stipulation the promotors of "Vitamins Plus" agreed to cease representing that "lusterless eyes or lack of whiteness of the teeth are generally due to Vitamin A deficiency," that "Vitamin E is known to be capable of preventing sterility or promoting mental or physical vigor," that "foods customarily have but a negligible amount of Vitamin B_1" and that "by the use of 'Vitamins Plus' . . . one may become active, gay, beautiful or charming, or live without a 'let-up' or 'let-down.'" Now "Vitamins Plus" is said to assure the users just beauty and health!

From the Lever Brothers advertisements it is evident that nobody has an exclusive monopoly on panaceas: The "tired and jittery" public is assured that "Vimms are here!" and "Boy—It's Great To Feel Good." "Vimms" ties in, of course, with the government's campaign for adequate nutrition. The ads state: "All of the five vitamins the government says you need daily" and "U. S. Govt. experts say 3 out of 4 need more vitamins and minerals."

As a result of the important advances in our understanding of nutritional problems, made in the last decade, it is evident that an optimal state of health cannot be assured without a dietary sufficiently broad to include a variety of essential elements. Among these are vitamins. However, many elements and substances are necessary for the maintenance of optimal nutrition. And this is the important truth—all the substances required by normal adult human beings can be supplied under ordinary conditions by a balanced diet.

The body of man has not evolved so that he can function efficiently on tablets and food concentrates. His physiology requires the materials essential to health and well-being in the form of food. Synthetic tablets are not a perfect substitute. Foods common to the American dietary properly selected will contribute everything that foods can give to the maintenance of good health. From an economic point of view, foods are the cheapest source of vitamins and other essential elements. The ingredients of food purchased in the form of pills are wastefully expensive. In these times, when conservation of economic resources is essential, people should remember this important fact. But they must also realize that, in the treatment of diseases, often tablets are advantageous in place of food. The manufacturers of shotgun vitamins do not of course offer their products for disease.

Vitamins are merely important food constituents that have been isolated, concentrated or synthetized. Restricted diets may lack some of these vitamins, and that lack expresses itself in a variety of symptoms. But relief of fatigue and the jitters or the creation of health and beauty will not come from vitamin capsules unless the symptoms have appeared or the beauty has been lost as a result of a specific deficiency. If daily consumption of a good serving of ham, a green vegetable, a glass of milk, a slice of brown bread, an orange and the other constituents of a suitable diet will not maintain the body in a satisfactory state of nutrition, a medical study is needed more than a shot with a shotgun pill of vitamins. A given amount of vitamins, like oil in the crank case of a car, is necessary to insure proper functioning; but the efficiency of the parts is not increased by adding unlimited amounts.

THERAPY OF RHEUMATOID ARTHRITIS

At a conference on therapy of rheumatoid arthritis held by the members of the Departments of Pharmacology and Medicine of Cornell University Medical College and the New York Hospital, Dr. Harry Gold presented a list of some thirty therapeutic measures. Dr. Russell L. Cecil defined rheumatoid arthritis as a chronic disease of the joints characterized in the early stages by pain and swelling of multiple joints and in the latter stages by ankylosis and deformity. Dr. Cecil stated that the theory of focal infection is generally discredited because in many patients the disease develops without any association with foci, and because patients who have had foci of infection removed have obtained only temporary relief, if any. Bee venom, foreign protein therapy, sulfur, iodides, salicylates and many other drugs have all had their vogue and have all been found more or less ineffective. Dr. Cecil emphasized four principles on which to base rational treatment of rheumatoid arthritis. These principles are rest, heat, rehabilitation and drug therapy to relieve pain. Under the last heading he would put salicylates first. Patients with arthritis can go on taking from 40 to 60 grains (2.6 to 3.9 Gm.) of acetylsalicylic acid daily without any apparent injury. Cecil treated 200 patients with gold salts and is enthusiastic about the results. Gold therapy, introduced in 1929 by Forestier in France, was based on two premises, one of which is definitely erroneous and the other doubtful. Forestier and other French

1. In 1938 the American public spent $100,000,000 for vitamin preparations. In 1937 they spent about half this amount, only 50 per cent of which was sold to or prescribed by physicians. For purposes of comparison, it is pointed out that the balance—$25,000,000—represented five times the expenditures for vitamin products bought directly by the public in 1935.—Sebrell, W. H.: J. A. M. A. **115**: 851 (Sept. 7) 1940.

workers believed that rheumatoid arthritis is a form of tuberculosis and that gold is efficacious in the treatment of tuberculous disease. Drs. Angevine and Rothbard have demonstrated in experiments a bacteriostatic effect of gold salts on the streptococcus and other organisms, both in vivo and in vitro. Other workers have advanced the theory that gold salts act by stimulating the reticuloendothelial system.

The following gold salts have been in use: sodium gold thiosulfate, sodium gold thiomalate (myochrysine) and aurothioglucose (solganol B). All of the efficacious gold salts contain a sulfhydryl radical. The salt is administered in weekly intramuscular injections, the dose at first being 10 mg. and increasing gradually to 100 mg. until a total of from 1 to 1.5 Gm. has been given. After a rest interval of from six to twelve weeks a second series is started. A serious objection to gold therapy is the prevalence of toxic reactions, the most important of which are exfoliative dermatitis, ulcerative stomatitis, toxic jaundice, purpura haemorrhagica and granulocytopenia. Of the 200 patients treated by Cecil, one third showed remission and one third considerable improvement. About one third or more had relapses. He believes that the outlook for gold therapy is promising. He finds that in estimating the effect of the gold therapy the sedimentation rate is of value. When the therapy is effective, the rate tends to return to normal. In the discussion, Dr. D. Murray Angevine called attention to the statement of one authority that from 60 to 75 per cent of arthritic patients will do well if one leaves them alone. He did not think that our knowledge of the etiology of the disease has been advanced by the use of gold salts. In his experimental work Dr. Angevine had seen much damage to the kidneys and livers of many animals treated with gold. Dr. Lewis A. Conner felt that evaluation of any therapy in rheumatoid arthritis was difficult because of natural recessions and periods of temporary relief.

In summing up, Dr. Gold emphasized the importance of physical and mental rest, a well balanced diet and abundant vitamins. The application of heat in various forms is helpful. Physical therapy, fever therapy and blood transfusions, corrective exercise and various orthopedic procedures are useful in appropriate cases. Acetylsalicylic acid appears to be the favorite for the control of pain. Iodides, arsenic and strychnine are of questionable value. Iron does not control anemia, as would be expected, because of the fact that the anemia is not as a rule due to iron deficiency. The value of the removal of tonsils and teeth as foci of infection is open to serious doubt. Vaccines have also made out a bad case for themselves. Dr. Cecil believes that gold salts have solid merit; a more skeptical view of their value was taken by other students of arthritis at this conference. The question was raised whether the use of gold salts may not represent merely another episode in the history of the long list of therapeutic promises for rheumatoid arthritis which have failed to materialize.

Current Comment

ARMED TRUCE IN THE VIRUS INFECTIONS

For many years it has been known that the virus of herpes simplex may remain latent in the human body for indefinite periods. A state of equilibrium between the host and the virus seems to develop. Fever, trauma and actinic irritation of tissue at mucocutaneous junctions appear in some way to upset the balance so that the latent virus produces its herpetic lesion. Sabin and Ward,[1] working at the University of Rochester School of Medicine, have recently demonstrated that the virus of poliomyelitis may likewise be present in active form in the tissues of the monkey without producing progressive manifestions of infection. Passage of the virus from animals in this state of armed truce to other monkeys has given rise to typical paralytic manifestations. Piece by piece the amazing characteristics of viruses are being disclosed. The discovery that certain viruses (the virus of tobacco mosaic disease) may be isolated in crystalline form was startling. The recent observations on virus equilibrium explain many heretofore mysterious aspects of virus diseases.

CASEIN AND SOY BEAN PROTEIN

At the recent Nutrition Conference for Defense in Washington [1] Professor Murlin emphasized the vast difference between the amount of milk provided in the dietary of the present trainees in the army and that allowed in the first World War. Another speaker pointed out that the large quantities of milk now needed to supply the requirements of the training camps has definitely affected the availability of market milk in those areas. This increased consumption influenced by better nutritional supervision has caused commercial imbalance in other directions as well. Casein, the chief protein of bovine milk, occupies an important place as a sizing for paper, an adhesive for plywood, in water paint, as a plastic, in insecticides and as a leather finish. The growing shortage of this protein has hastened the commercial production of soy bean protein,[2] which is one of the most promising substitutes for casein. Ten thousand tons of soy bean protein annually will be required to compensate for the casein shortages. Chemists in the Soy Bean Research Laboratory of the U. S. Department of Agriculture have developed methods for the preparation of high grade protein in commercial quantities, and plans are being made to increase the production. The rapid increase in the quantity of dried and processed milks being sent to Britain further emphasize the importance of securing adequate substitutes for those by-products of the dairy industry which have entered largely into other industries.

1. Sabin, Albert B., and Ward, Robert: J. Exper. Med. **73**: 757 (June) 1941.

1. National Nutrition Conference for Defense, editorial, J. A. M. A. **116**: 2598 (June 7) 1941.

2. American Chemical Society, News Edition **19**: 946 (Aug. 25) 1941.

MEDICAL PREPAREDNESS

In this section of ***The Journal*** *each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medical preparedness, and such other information and announcements as will be useful to the medical profession.*

SELECTIVE SERVICE PHYSICIANS WILL CONTINUE TO SERVE

The announcement made under Medical Preparedness in THE JOURNAL, October 18, page 1364, that a single physical examination for selective service registrants would be the procedure to be followed after Jan. 1, 1942 was based on an official release from the National Headquarters of the Selective Service System. Subsequently an announcement has been received to the effect that this original release was premature and that a further statement will be made in the near future indicating the modifications that are to take place in the methods of examination.

LOCATIONS FOR PHYSICIANS IN DEFENSE AREAS

A serious need for additional physicians exists in many vital defense areas. These shortages have arisen because of the great increases in civilian population which have occurred during the year. The needs exist in a large number of states in communities varying in size from small villages to large cities.

The demand for medical care is already so urgent that it should be relatively easy, in many places, to establish practice at once. Furthermore, the coming of winter will result in overtaxing the medical personnel in many other localities where at present the physicians are very near the limit of their capacities.

In most of these defense areas there are defense housing projects in which office space or living accommodations or both may be secured. Surveys in progress have already revealed a number of areas which need physicians, and, as additional areas are surveyed, other important locations will undoubtedly be found.

The United States Public Health Service in cooperation with the Division of Defense Housing, of the Federal Works Agency, which supervises these projects, is interested in acquainting physicians with the needs of these communities. If you are interested in securing more specific information about localities for the establishment of practice, please communicate with me.

(Signed) THOMAS PARRAN
Surgeon General

NOTE:—We are informed that physicians who write in response to this announcement will be sent forms on which to record their training, experience and preference as to parts of the country for practice. Every precaution is to be taken so as not to encourage physicians to remove from localities which are at this time undersupplied with physicians.—ED.

GOVERNMENT PROVIDES FUNDS FOR TRAINING NURSES AT WAYNE UNIVERSITY

Wayne University, Detroit, announces that the federal government has tentatively allotted to that school $52,190 for training undergraduate and graduate nurses. This fund will finance a project to provide for increased enrolment for student nurses at Wayne University, the instruction in nursing being carried on at the Providence, Harper, St. Mary's, Children's, Evangelical Deaconess and Herman Kiefer hospitals in Detroit. About $3,500 of this fund is for training graduate nurses specializing in public health nursing. Wayne University's training program in public health nursing is one of the several curriculums offered for graduate nurses to enable them to participate more effectively in fields of special choice.

UNITED STATES ARMY FLAGS

The silk colors carried by the President, the Chief of Staff, the Secretary of War, the standards carried by all regiments, automobile flags used by general officers, post and storm flags displayed at every Army station, flags used on transports and Army harbor boats, and guidons for troops, batteries and companies, all are made at the Quartermaster Depot in Philadelphia. The manufacture of silk colors and standards at this depot is a specialized art. The stars are made of solid embroidered silk on a hand embroidery machine. The blue fields are placed in frames on a machine provided with many needles which turn out a stitch resembling hand embroidery, the two sides alike. The regimental colors and standards, each with its own coat of arms, and mottoes, are embroidered by hand and as many as thirty different shades of silk are used in embroidering each flag.

ILLINOIS SELECTIVE SERVICE COMMISSION ESTABLISHES DIVISION OF VENEREAL DISEASE

The Illinois Selective Service Commission has established a new Division of Venereal Disease, and a new program has been set up whereby laboratory evidence of venereal disease will no longer be grounds for military rejection in Illinois. Selective Service registrants whose laboratory tests indicate venereal disease will be deferred to Class 1-B and brought under medical treatment in civilian life. Each local draft board will review its rejections and recall the affected registrants for reexamination and, if laboratory examination shows evidence of venereal disease, the selectee will be referred to his physician or to a clinic for treatment. Local advisory board sections are being established in each Illinois city where a venereal disease clinic is in operation. This new program, Dr. Ronald R. Cross, Illinois Director of Public Health, said should aid in checking the spread of venereal disease in Illinois. The chairman of the Selective Service Commission's medical advisory board downstate is Dr. Herman M. Soloway, chief of the division of venereal disease control of the state health department; the Chicago chairman is Dr. Herman N. Bundesen, president of the Chicago Board of Health.

FIFTIETH ANNIVERSARY NUMBER OF THE ASSOCIATION OF MILITARY SURGEONS

The September *Military Surgeon* commemorates the fiftieth anniversary of the founding of the Association of Military Surgeons in the United States. In preparing this issue, Col. Edgar Erskine Hume, M. C., U. S. Army, scanned the fifty-four thousand pages of the *Military Surgeon* that have been published during the half century and thus was able to present a history of the organization, with numerous pictures of past presidents. The founder of the Association of Military Surgeons was Dr. Nicholas Senn, professor of surgery at Rush Medical College in Chicago, and the first meeting of the association was held in that city on Sept. 17, 1891. The issue contains summaries of the proceedings of many of the annual meetings, abstracts of papers and editorials that have appeared in the *Military Surgeon*, the constitution of the organization and other documents. This number is a fitting tribute to the organization and to the numerous military officers who have had a part in the success of this organization.

ARMY RESERVE OFFICERS ORDERED TO ACTIVE DUTY

WAR DEPARTMENT

The following additional medical reserve officers have been ordered to extended active duty by the War Department, Washington, D. C.:

BUKANTZ, Samuel C., 1st Lieut., Washington, D. C.
DIXON, Chalmer D., 1st Lieut., Denver.
FRANCO, Robert, 1st Lieut., Seattle, Wash.
FREDERICK, Lewis Oliver, 1st Lieut., Osborn, Ohio.
GANS, Edward Wolf, 1st Lieut., Harlowton, Mont.
GEIGER, James Metz, 1st Lieut., San Francisco, Calif.
HOLLAND, Moses Henry, 1st Lieut., Weehawken, N. J.
INGRAHAM, Edgar S., 1st Lieut., Mercer, Pa.
LAW, John H., 1st Lieut., Detroit.
MEIGHER, Stephen C., 1st Lieut., New York.
PERKINS, Robert Donald, 1st Lieut., Moline, Ill.
PROTHRO, Winston Boone, 1st Lieut., Arkadelphia, Ark.
RAWLS, Noel Burdett, 1st Lieut., Portland, Ore.
RICHARDSON, Howard L., 1st Lieut., Tacoma, Wash.
SCOTT, Wirt Stanley, Jr., 1st Lieut., San Francisco.
SHWAYDER, Montimore C., 1st Lieut., Fresno, Calif.
WEISS, Thomas Edward, 1st Lieut., New Orleans.

Orders Revoked

ROMANSKY, Monroe James, 1st Lieut.,

SIXTH CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, Sixth Corps Area, which comprises the states of Wisconsin, Illinois and Michigan:

ALLISON, Olaf Will, 1st Lieut., Danville, Ill., Basic Flying School, Enid, Okla.
BALLARD, George Pratt, 1st Lieut., Chicago, Ill., Basic Flying School, Enid, Okla.
BATES, Alvin F., 1st Lieut., Chicago, 33rd Division, Camp Forrest, Tenn.
BERNSTEIN, Alexander M., 1st Lieut., New Orleans, Basic Flying School, Sherman-Denison, Texas.
BICA, Gaetano A., 1st Lieut., Chicago, 5th Infantry Division, Fort Custer, Mich.
CAMP, Edward Hays, 1st Lieut., Joliet, Ill., Sheppard Field, Wichita Falls, Texas.
COHN, Arnold Melvin, 1st Lieut., Springfield, Ill., Basic Flying School, Enid, Okla.
CONRAD, Cecil Dee, 1st Lieut., Ypsilanti, Mich., Sheppard Field, Wichita Falls, Texas.
CUTRERA, Hugo T., 1st Lieut., Chicago, U. S. Army Air Base, Tucson, Ariz.
DAILEY, Dee William, 1st Lieut., Elcho, Wis., Basic Flying School, Sherman-Denison, Texas.
ENTIN, Oscar Louis, 1st Lieut., Chicago, Basic Flying School, Waco, Texas.
ESPENSCHEID, John S., 1st Lieut., Danville, Ill., Parks Air College, East St. Louis, Ill.
FORSYTHE, John R., 1st Lieut., Detroit, Basic Flying School, Waco, Texas.
FRANCO, Joseph Richard, 1st Lieut., Chicago, Bonham Aviation School, Bonham, Texas.
FRANK, Louis S., 1st Lieut., Chicago, Oklahoma Air College, Oklahoma City.
FRIEDMAN, Harold S., 1st Lieut., Chicago, Spartan Aircraft Company, Muskogee, Okla.
FROSTIC, William Duncan, 1st Lieut., Wyandotte, Mich., Sheppard Field, Wichita Falls, Texas.
GALLAGHER, Edward James, 1st Lieut., Chicago, Wilson-Bonfils Flying School, Chickasha, Okla.
HAFTKOWSKI, Dominic J., 1st Lieut., Chicago, U. S. Army Air Base, Albuquerque, N. M.
HARTLETT, Elvin Mann, Major, Evanston, Ill., Headquarters Illinois State Selective Service, Springfield, Ill.
HENEVELD, Edward Henry, 1st Lieut., Detroit, 5th Infantry Division, Fort Custer, Mich.
JOHNSON, Chester T., 1st Lieut., Oak Park, Ill., Brayton Flying Service, Cuero, Texas.
JOHNSON, Ward Rayfield, 1st Lieut., Flint, Mich., Sheppard Field, Wichita Falls, Texas.
KIEFFER, John Phelps, 1st Lieut., Evergreen Park, Ill., Will Rogers Field, Oklahoma City.
LIPTON, Raymond F., 1st Lieut., Detroit, U. S. Army Air Base, Albuquerque, N. M.
MATTES, Max Wolf, 1st Lieut., Detroit, U. S. Army Air Base, Albuquerque, N. M.
McCALL, Harold F., 1st Lieut., Chicago, U. S. Army Air Base, Tucson, Ariz.
MOFFETT, James Leo, 1st Lieut., Montfort, Wis., Will Rogers Field, Oklahoma City.
MURPHY, Francis C., 1st Lieut., Chicago, Will Rogers Field, Oklahoma City.
RAMSEY, Jac Allen, Captain, Alpena, Mich., 5th Infantry Division, Fort Custer, Mich.
ROSS, Philip H., 1st Lieut., Chicago, Goodfellow Field, San Angelo, Texas.
SHAW, Jesse W., 1st Lieut., Carbondale, Ill., Will Rogers Field, Oklahoma City.
SIBRANS, William Albert, 1st Lieut., East Detroit, Mich., Will Rogers Field, Oklahoma City.
SNODGRASS, Herbert M., 1st Lieut., Madison, Wis., Basic Flying School, Sherman-Denison, Texas.
STEVENSON, Edward Lee, 1st Lieut., Ionia, Mich., 5th Infantry Division, Fort Custer, Mich.
WARNER, William James, 1st Lieut., Detroit, U. S. Army Air Base, Tucson, Ariz.
WARSHELL, Arnold H., 1st Lieut., Chicago, U. S. Army Induction Station, Chicago.
WIENER, Morton J., 1st Lieut., Lansing, Mich., Goodfellow Field, San Angelo, Texas.
WIGODSKY, Herman Saul, 1st Lieut., Evanston, Ill., Basic Flying School, Enid, Okla.
WITUS, Carl, 1st Lieut., Detroit, Basic Flying School, Sherman-Denison, Texas.
WOODARD, Lawrence E., 1st Lieut., Chicago, Basic Flying School, Waco, Texas.
YOUNG, Tommy Richard, 1st Lieut., Mount Carmel, Ill., Sheppard Field, Wichita Falls, Texas.

Orders Revoked

RAICHART, William A., 1st Lieut., Berwyn, Ill., 33d Division, Camp Forrest, Tenn.
SHOEMAKER, John Calvin, 1st Lieut., Vassar, Mich., 135th Medical Regiment, Camp Shelby, Miss.

ORDERED TO FOREIGN DUTY

ARNOLD, Walter Frank, Lieut., M. C.-V. (S.) N. R., Long Beach, Calif., Dispensary, Naval Air Station, Pearl Harbor, Hawaii.
AYERS, Robert Lawrence, 1st Lieut., M. R. C., Penngrove, Calif., Fort William McKinley, Philippine Islands.
BERTRAM, Harold Frederick, 1st Lieut., M. R. C., Oklahoma City, Sternberg General Hospital, Manila, Philippine Islands.
BRADDOCK, William Hallock, Lieut. Col., Milwaukee, Philippine Department, Fort Santiago, Manila, P. I.
BRANNAN, Max, 1st Lieut., Miami, Fla., Panama Canal Department, Albrook Field, Canal Zone.
de DIEGO, Manuel, Captain, N. G., Cayey, Puerto Rico, Medical Detachment, 162d Field Artillery, Henry Barracks, Cayey, Puerto Rico.
EBELING, Walter Wilford, Lieut., M. C.-V. (S.) N. R., Mount Vernon, Wash., Navy Yard, Pearl Harbor, Hawaii.
FLAIG, Julian Vincent, Captain, M. R. C., Schofield Barracks, Hawaii, Schofield Barracks, Hawaii.
HAINES, John Wister, 1st Lieut., Philadelphia, Station Hospital, Fort Mills, Corregidor, P. I.
HERMES, Richard Lawrence, 1st Lieut., M. R. C., San Juan, Puerto Rico, Station Hospital, Ponce Air Depot, Ponce, Puerto Rico.
HEWLETT, Thomas Hill, 1st Lieut., Corregidor, P. I., Station Hospital, Fort Mills, Corregidor, P. I.
KERN, Clyde Vincent, 1st Lieut., M. R. C., Tulsa, Okla., Fort Stotsenburg, Philippine Islands.
KRAFT, George Louis, Lieut. (j. g.), M. C.-V. (G.) N. R., Chicago, Naval Air Station, San Juan, Puerto Rico.
LAWRY, Lee Llewellyn, Jr., 1st Lieut., M. R. C., Derrick City, Pa., Station Hospital, San Juan, Puerto Rico.
MILLER, Julius Yoland, Lieut. (j. g.), M. C.-V. (G.) N. R., Chelsea, Mass., U. S. S. *Erie*, Balboa, Canal Zone.
NEIBRIEF, Milton Nelson, 1st Lieut., M. R. C., Brooklyn, Borinquen Field, Puerto Rico.
PANG, David Koon Lee, Captain, N. G., Honolulu, Hawaii, 298th Infantry, Schofield Barracks, Honolulu, Hawaii.
SCHWAB, William John, Lieut. (j. g.), M. C.-V. (G.) N. R., Providence, R. I., Naval Operating Base, Guantanamo Bay, Cuba.
WELSH, Clyde Lionel, Lieut. Comdr., M. C.-O., N. R., Seattle, Naval Hospital, Canacoa, Cavite, Philippine Islands.

ORGANIZATION SECTION

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Change in Status.—S. 165 has been reported to the Senate providing that an enlisted man of the Army, Navy, Marine Corps and Coast Guard of the United States in the active service whose term of enlistment shall expire while he is suffering disease or injury incident to service and not due to misconduct and who is in need of medical care or hospitalization may, with his consent, be retained in service beyond the expiration of his term of enlistment and entitled to receive at government expense medical care or hospitalization until he shall have recovered to such extent as would enable him to meet the physical requirements for reenlistment or until it shall have been ascertained by competent authority of the service concerned that the disease or injury is of a character that recovery to such an extent would be impossible.

Bills Introduced.—S. 1959, introduced by Senator Walsh, Massachusetts, proposes to amend "An Act to effect needed changes in the Navy ration" so as to permit the use of oleomargarine or butter substitute when climatic or other conditions render the use of butter impracticable. H. R. 5801, introduced by Representative Sutphin, New Jersey, provides for a survey of the resources of the United States in the field of physical education for purposes of initiating a program to enable the youth of the country to participate in supervised physical activities planned to meet their respective needs. H. R. 5828, introduced by Representative Sauthoff, Wisconsin, proposes to amend the Articles for the Government of the Navy by providing that, before directing the trial of any charge by general court martial, the convening authority shall cause a medical board to be convened to examine the accused. Such medical board, it is proposed, shall consist of such number of medical officers, not less than three, as the convening authority may see fit, at least one of whom shall, if practicable, be a psychiatrist. This medical board will investigate the mental capacity and condition of the accused, both at the time the offense charged was alleged to have been committed and at the time of the examination, with a view to determining whether or not the accused suffered or suffers any mental defect or derangement. H. R. 5852, introduced by Representative Gearhart, California, provides that, in furtherance of national defense, alcohol or other distilled spirits of a proof strength of not less than 180 degrees may be withdrawn free of tax from receiving cisterns at any registered distillery or from storage tanks in any internal revenue bonded warehouse for transfer to tanks, tank cars or other approved containers, or by pipe line, for use of the United States or any governmental agency thereof.

DISTRICT OF COLUMBIA

Bill Introduced.—S. 1980, introduced by Senator Bilbo, Mississippi, provides that no person shall carry on the business or profession or discharge any duties of an undertaker, mortician, funeral director or embalmer unless there has been issued to him a license by the Commissioners of the District of Columbia. The bill undertakes to prescribe the qualifications to be met for applicants before such license may be issued and provides for the revocation of a license for certain causes.

WOMAN'S AUXILIARY

California

The Santa Cruz County auxiliary met in May at the Rio Del Mar Country Club. Doctors' wives from Camp McQuaide were guests. A book review, "Life with Father," was presented by Mrs. Frank Cralle.

Pennsylvania

The Mifflin County auxiliary recently was extended the courtesy of a tour through the American Viscose Corporation plant at Lewistown. The processes were fully explained, starting with the wood pulp of which rayon is made to the finished yarn on spools and in skeins ready to be shipped. This plant covers twenty-five acres and is the largest of seven owned by the Viscose Corporation in the United States.

South Dakota

Mrs. Frederick C. Nilsson of Sioux Falls, S. D., president of the Woman's Auxiliary to the South Dakota State Medical Association, has presented some historical facts concerning that organization, which was organized on Sept. 29, 1910 and has been in regular operation since that date. The state auxiliary has the original minutes of the first meeting. The South Dakota auxiliary believed that it was the first to organize a state auxiliary. Oklahoma, however, presented to the historian of the Woman's Auxiliary to the American Medical Association data which indicate that the woman's auxiliary to the Oklahoma State Medical Association or, more correctly, the Oklahoma Territorial Medical Association, was organized in Shawnee on May 15, 1907. Mrs. W. C. Bradford of Shawnee was the first state president. This auxiliary continued to meet in annual session for eight years and then ceased to function until its reorganization in 1926 in Oklahoma City, when Mrs. Fenton M. Sanger was elected president.

Virginia

Alexandria auxiliary officers for 1941 are: president, Mrs. C. E. Arnette; president-elect, Mrs. H. A. Hornthal; vice president, Mrs. W. E. Beattie; secretary, Mrs. George Lemeshewsky, and treasurer, Mrs. C. V. Amole. The auxiliary assists in the maintenance of a bed for a physician or members of a physician's family at the Blue Ridge Sanatorium. It redecorated and helped furnish a doctor's room at the Alexandria Hospital. There is a committee in charge of this room. During this year they have made a contribution of $10 to this clinic.

Washington

The Pierce County auxiliary held an open meeting recently in Tacoma which was in charge of Mrs. G. C. Trimble, public relations chairman. The guest speaker, Dr. Leland Powers, city health officer, spoke on "The Recent Poliomyelitis Epidemic in Tacoma and the Sewage Problem in Tacoma." There were thirty-five present.

The King County auxiliary, of which Mrs. W. A. Millington is president, met in Seattle at the Medical-Dental Auditorium, recently, with seventy-five present. This was a public relations meeting in charge of the chairman, Mrs. E. A. Nixon. Mr. E. A. Anderson, executive secretary of the Washington State Medical Association, gave a report on the recent legislature. Mrs. Austin De Freese, an auxiliary member, showed colored movies of her trip to Mexico.

The Spokane County auxiliary had one hundred in attendance at the open public relations meeting recently at the Woman's Athletic Club. Questions on health, sent in by woman's clubs, were answered by Drs. R. G. Boyd, Alfred Taylor, Donald Palmer and Clarence A. Veasey Jr.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ADDITIONAL MEDICAL COLLEGE NEWS AND ARTICLES APPEAR IN THE STUDENT SECTION, PAGE 1475.

ARKANSAS

Personal.—Dr. Guy P. Slaughter, Little Rock, has been named field consultant in obstetrics to the state board of health. ——Dr. Barnett P. Briggs, Little Rock, has been appointed acting medical director of the crippled children's division of the state department of public welfare.

Society News.—The Cleveland County Medical Society has disbanded under this name and has affiliated with the Jefferson County Medical Society. The latter society was addressed at its September meeting in Pine Bluff by Drs. Thomas D. Moore, Memphis, Tenn., on "Ureteral Kinks and Strictures," and Robert Lyle Motley, Memphis, "Indigestion." —— Among others, Dr. Henry King Wade, Hot Springs National Park, addressed the Ouachita County Medical Society, September 4, in Camden on "Carcinoma of the Prostate."

CALIFORNIA

Dr. Kellogg Retires as Chief of Laboratories. — Dr. Wilfred H. Kellogg, Berkeley, chief of the division of laboratories of the California Department of Public Health and credited with being the first man to make a bacteriologic diagnosis of plague in the United States, retired from his activities September 3, according to *Western Public Health*. A native of Arkansas City, Kan., 1871, Dr. Kellogg graduated at the University of California Medical School, San Francisco, in 1896. He was bacteriologist of the San Francisco Department of Health, 1900-1903; state bacteriologist in 1908; acting assistant surgeon, U. S. Public Health Service, detailed for plague investigations in Venezuela, 1909-1911; formerly clinical instructor in hygiene and public health, Stanford University School of Medicine, San Francisco; subsequently assistant clinical professor of preventive medicine and hygiene, University of California Medical School, associate clinical professor and associate clinical professor of preventive medicine, emeritus. He was secretary and executive officer of the state board of health from 1918 to 1920 and director of laboratories, department of public health of San Francisco, 1912 to 1917.

COLORADO

Society News. — The Medical Society of the City and County of Denver devoted its meeting October 7 to a symposium on pain. The speakers and the aspects they considered were Drs. Abe Ravin, physiology; William R. Lipscomb, William M. Bane and Rex L. Murphy, head pain, and Luman E. Daniels, diseases of the peripheral nerves and spinal cord.

State Medical Election.—Dr. Ralph S. Johnston, La Junta, was chosen president-elect of the Colorado State Medical Society at its annual meeting in September and Dr. Guy C. Cary, Grand Junction, was installed as president. Other officers include Drs. Edward R. Mugrage, Denver, vice president; John S. Bouslog, Denver, constitutional secretary, and William A. Campbell Jr., Colorado Springs, treasurer. Mr. Harvey T. Sethman, Denver, is the executive secretary.

GEORGIA

University News.—Benedict E. Abreu, Ph.D., instructor in pharmacology, University of Oklahoma School of Medicine, Oklahoma City, has been appointed assistant professor of pharmacology at the University of Georgia School of Medicine, Augusta. William F. Alexander, Ph.D., and Encil Morton Bradley, Ph.D., instructors in anatomy, Louisiana State University School of Medicine, New Orleans, have been appointed to assistant professorships.

Society News. — The Fulton County Medical Society, Atlanta, was addressed, October 6, by Drs. George A. Williams on "An Improved Vehicle for Medication of the Vagina" and Linus J. Miller and Hayward S. Phillips, "Use of Sodium Pentothal in Combination with Other Anesthetic Agents." All are from Atlanta.——Dr. Allen H. Bunce, Atlanta, president of the state medical association, discussed "The Medical Association of Georgia" before the Fifth District Medical Society in Atlanta, October 20. Other speakers included Dr. Louis L. Williams Jr., Atlanta, Ga., medical director, U. S. Public Health Service, liaison officer, Fourth Corps Area, on "Public Health Work in Relation to National Defense."

IDAHO

New Health Unit in Boise.—A new city-county public health unit has been established in Boise and Ada County. Dr. Gustavus Denton Bock, U. S. Public Health Service, Washington, D. C., has been appointed director with offices at 415 Capitol Securities Building, Boise.

ILLINOIS

Postgraduate Conference. — The Illinois State Medical Society will conduct a postgraduate conference in the Eighth Councilor District at the Hotel Wolford, Danville, November 6. Dr. Melvin L. Hole, Danville, president of the Vermilion County Medical Society, will preside. Included on the program will be:

Dr. Frederick H. Falls, Chicago, Management of Prolonged Labor.
Dr. John R. Vonachen, Peoria, Present Status of Vitamin Therapy.
Dr. Charles E. Galloway, Evanston, Ill., Office Gynecologic Procedure or Treatment.
Dr. M. Herbert Barker, Chicago, Nephritis.
Dr. Lee C. Gatewood, Chicago, Medical Management of Upper-Gastrointestinal Tract Ulcer.
Dr. Raymond W. McNealy, Chicago, Surgical Management of Upper-Gastrointestinal Tract Ulcer.

Dr. Robert S. Berghoff, Chicago, will conduct a heart clinic.

Chicago

Meeting of Women's Medical and Bar Associations. —Branch number 2 of the American Medical Women's Association met jointly with the Women's Bar Association of Illinois, October 9, at the Chicago Bar Association. Dr. Carroll C. L. Birch discussed "Nonpaternity" and Mr. Royal W. Irwin, "The Expert Witness."

Dr. Cutter Honored.—Dr. Irving S. Cutter, dean emeritus of Northwestern University Medical School, was honored at the annual Founders' Day ceremony, October 6. An honorary degree of doctor of science was conferred on Dr. Cutter by Franklyn B. Snyder, LL.D., president of Northwestern University, and his portrait was unveiled in the Archibald Church Library. Leslie B. Arey, Sc.D., Robert Laughlin Rea professor of anatomy, presided and Dr. James Roscoe Miller, the new dean of the medical school, reviewed Dr. Cutter's service to the school. Dr. Cutter had been dean of Northwestern from July 1925 until his retirement from that position this year.

The First Kretschmer Memorial Lecture.—Dr. John H. Lawrence, assistant professor of medicine, University of California Medical School, San Francisco, will deliver the first Edwin R. Kretschmer Memorial Lecture of the Institute of Medicine of Chicago at the Palmer House, November 11. His subject will be "Studies on Leukemia and Allied Diseases with Artificial Radioactivity." Dr. and Mrs. Herman L. Kretschmer established the Edwin R. Kretschmer Memorial Fund in June this year in memory of their son, who died in February. Income from the fund is to be used for research lectures on myelogenic leukemia and for research on blood dyscrasias.

Branch Meetings.—The South Side Branch of the Chicago Medical Society was addressed, October 16, by Drs. Edward L. Compere on "Fractures of the Wrist"; Horace P. Stimson, "Fractures of the Ankle," and Paul C. Bucy, "Traumatic Injuries of the Skull and Brain."——The Northwest Branch devoted its meeting, October 17, to a symposium on diseases of the gallbladder with the following speakers: Drs. Andrew C. Ivy, Clifford J. Barborka and Raymond W. McNealy.—— Dr. Israel Davidsohn and members of the staff of Mount Sinai Hospital conducted a clinical pathologic conference before the Douglas Park Branch, October 17.——At a meeting of the Jackson Park Branch, October 16, Dr. James Roscoe Miller, dean of Northwestern University Medical School, discussed "Problems of the Medical Schools in the Present Emergency." Drs. John H. Mohardt, James K. Stack and Harvey S. Allen discussed, respectively, the influence of the war on treatment of chest and abdominal wounds, peripheral wounds and the treatment of burns. —— Dr. Archibald L. Hoyne discussed encephalitis before the Stock Yards Branch, October 16.

INDIANA

Personal.—An oil portrait of the late Dr. James O. Parramore, first superintendent of the Lake County Tuberculosis Sanatorium, Crown Point, was recently unveiled in the sanatorium. In the future the hospital will be known as the James O. Parramore Hospital.——Dr. Charles P. Anderson, Durham, N. C., has been appointed medical director of the Gary school board to succeed Dr. Otis B. Nesbit, retired.

State Medical Election.—Dr. Carl H. McCaskey, Indianapolis, was chosen president-elect of the Indiana State Medical Association at its recent meeting in Indianapolis. Dr. Albert M. Mitchell, Terre Haute, will end his term as president January 1, when he will be succeeded by Dr. Maynard A. Austin, Anderson. French Lick was selected as the place for the 1942 meeting.

Society News. — The Tippecanoe County Medical Society was addressed in Lafayette, September 9, by Dr. Parke G. Smith, Cincinnati, on "Ureteral Injuries."—— Dr. Charles L. Mahoney, Terre Haute, discussed "Treatment of Commoner Diseases and Injuries of the Eye" before the Greene County Medical Society in Linton, September 11.——The Eleventh Indiana Councilor District Medical Association was addressed, October 8, in Logansport by Drs. Harry E. Mock, Chicago, on "Management of Skull Fractures—Report of Nationwide Survey of 6,000 Cases"; Clifford L. Williams, Logansport, "Nervous and Mental Cases in General Practice," and John R. Thrasher, Indianapolis, "Neurosyphilis."——Dr. Raphael Isaacs, Chicago, discussed "Blood Changes in Some Common Diseases of Diagnostic Value" before the Lake County Medical Society in Hammond, October 10.

MAINE

Clinical Session.—The Maine Medical Association held its annual fall clinical session in Portland, October 16-17. Clinics were held at the Maine General Hospital, Maine Eye and Ear Infirmary and Children's and Queen's hospitals. Thursday evening was given over to the regular meeting of the Cumberland County Medical Society with the principal speaker, Dr. Walter E. Tobie, Portland, discussing "An Old Fashioned Medical School." At the concluding session, Friday afternoon, Dr. Clarence Guy Lane, Boston, spoke on "Occupational Dermatoses."

MICHIGAN

Hospital News.—Mount Carmel Mercy Hospital, Detroit, broke ground on September 26 for a six story, two hundred bed addition. The new wing will include operating rooms of various types, an enlarged laboratory and pharmacy facilities and an auditorium with a seating capacity of four hundred. The addition will bring the bed capacity of the hospital to six hundred.

Symposium on Sulfathiazole and Sulfadiazine. — The Wayne County Medical Society, Detroit, devoted its meeting, October 13, to a symposium on sulfathiazole and sulfadiazine. Dr. Gordon B. Myers gave the introduction. Other speakers were Drs. Alvin E. Price on "Use in Pneumonia"; Milton R. Weed, "Use in Staphylococcic and Streptococcic Infections"; Ira Muir Clapper, "Use in Pyelonephritis," and Paul H. Noth, "Toxicity." All are from Detroit.

New Division of Pharmacologic Research at Parke, Davis & Co.—Dr. Carl C. Pfeiffer, formerly associate professor of pharmacology and therapeutics, Wayne University College of Medicine, Detroit, has been placed in charge of a new section for pharmacologic research at Parke, Davis & Co. Earl R. Loew, Ph.D., formerly assistant professor of physiology at Wayne, has been appointed research pharmacologist. According to *Science,* both men will continue to lecture at the medical school.

MINNESOTA

Advisory Committee Named to Mental Hygiene Program.—Four members of the Minnesota Society of Neurology and Psychiatry have been appointed in an advisory capacity to the new program of mental hygiene and mental testing in the state division of public institutions. They are Drs. John C. McKinley, Minneapolis; Frederick P. Moersch, Rochester; Ernest M. Hammes, St. Paul, and Lawrence R. Gowan, Duluth. Dr. David E. McBroom, medical superintendent of the Minnesota Colony for Epileptics, Cambridge, became director of the program on September. 1.

Personal. — A bronze plaque bearing the likeness of Dr. James L. Adams, pioneer physician of Morgan, was unveiled there in September, the gift of friends. Mounted on a massive granite shaft, the plaque is the work of Amerigo Brioschi, St. Paul. In addition to the name James L. Adams, the inscription reads "A pioneer doctor. Service to his people filled the life of this man without thought of personal gain." Dr. and Mrs. Adams and their daughters came from their home in Van Nuys, Calif., to be present at the unveiling.—— Residents of Sherburn held an open house in the community hall, September 14, to honor Dr. Robert C. Farrish on his completion of forty years in the practice of medicine.——Dr. Waltman Walters, Rochester, Minn., has been named a member of the National Advisory Cancer Council, succeeding Dr. James B. Murphy of the Rockefeller Institute.——Dr. Paul W. Kabler, Minneapolis, has been granted leave of absence for one year from his position as assistant chief of laboratories, division of preventable diseases, Minnesota State Board of Health, to do postgraduate work at the Harvard Medical School, Boston, according to *Minnesota Medicine.*

MISSOURI

Exhibit to Commemorate Death of Paracelsus.—The St. Louis Medical Society announces that its collection of "Paracelsica" will be used in a special display during the meeting of the Southern Medical Association in St. Louis, November 10-13, to commemorate the four hundredth anniversary of the death of Paracelsus (Theophrastus Bombast von Hohenheim, 1493-1541). The collection will be exhibited in the society's library. It is said to be the largest collection of Paracelsica in the Western Hemisphere. The only known larger assemblage of similar works and articles was that of the late Prof. Karl Sudhoff at Leipzig, Germany, the fate of which is now unknown on this side of the Atlantic, the librarian of the St. Louis Medical Society announces. There are more than four hundred numbers in the society's collection, part of which was shown in May before the American Association of the History of Medicine at Atlantic City and later at the Johns Hopkins Institute of Medical History, Baltimore.

Society News. — Dr. Peter G. Danis discussed "Recent Observations on the Etiology, Course and Treatment in Icterus and Anemia of the Newborn" before the St. Louis Medical Society, September 23, and Dr. Harry E. Wachter presented a "Statistical Study of the Incidence and Familial Tendency of the Interrelated Clinical Types of Anemia of the Newborn with Icterus." Both are of St. Louis. The society will be addressed on October 28 by the following members of the staff of the University of Missouri School of Medicine, Columbia: Max M. Ellis, Sc.D., "Some Phases of Arsenic Distribution, Storage and Toxicity"; Drs. David V. LeMone, "Use of X-Ray Therapy in Inflammations," and Dan G. Stine, "The Vagohypotonic Individual."——Carl R. Moore, Ph.D., professor of zoology, University of Chicago, Chicago, discussed "Physiology of the Testis and Application of the Male Sex Hormone" before the Kansas City Academy of Medicine on October 17.——Dr. James Barrett Brown, St. Louis, discussed "Plastic Surgery of the Head and Neck" before the St. Louis County Medical Society, September 24.——Dr. Harold E. Petersen, St. Joseph, discussed "Anoxemia in the Newborn" before the Buchanan County Medical Society in St. Joseph, October 1.——Dr. Daniel L. Sexton discussed "The Syndrome of Anterior Pituitary Failure" before the St. Louis Trudeau Club October 2.

NEW JERSEY

Society News. — Dr. Harold W. Jones, Philadelphia, addressed the Essex County Medical Society, Newark, October 9, on "Value of Blood and Plasma in Transfusion."—— Dr. Hugo Roesler, Philadelphia, addressed the Morris County Medical Society, Morris Plains, October 16, on "Bedside Diagnosis and Treatment of Disturbances of Rate and Rhythm."——Dr. Ralph Colp, New York, will address the New Jersey Gastro-Enterological Society in Jersey City, December 1, on "Surgical Problems in Benign Lesions of the Small Intestine and Malignant Lesions of the Large Bowel."——Dr. Roscoe W. Teahan, Philadelphia, addressed the Cumberland County Medical Society, Bridgeton, October 14, on "Clinical Aspects of Superficial Cancer."——Dr. Bernard I. Comroe, Philadelphia, addressed the Camden County Medical Society, Camden, October 7, on "Practical Pointers in Treatment of the Arthritic Patient."——A symposium on poliomyelitis was presented at a meeting of the Bergen County Medical Society at Bergen Pines, October 14, by Drs. Philip M. Stimson, New York; Joseph R. Morrow, Ridgewood; David F. Reilly, Ridgewood; Nelson C. Policastro, Hackensack, and Frederick G. Dilger, Hackensack.

NEW YORK

Outbreak of Dysentery.—Thirty-five cases of dysentery caused by Bacterium dysenteriae Flexner, with five deaths, occurred in September in an institution for the aged in Niagara County, *Health News* reports. The first attack occurred on September 4 and two others on September 8. All the patients were women who had been roommates of another woman who had been ill in August. The last attack occurred on September 21. The 5 patients who died were aged and infirm persons who had been confined to bed before the onset of this illness, it was said.

District Meeting.—The Second District Branch of the Medical Society of the State of New York will meet in Garden City, October 30. A symposium on industrial medicine will be presented by Drs. Cassius H. Watson, New York, who will discuss preemployment examination; Irving Gray, Brooklyn, occupational diseases; Samuel Potter Bartley, Brooklyn, prevention of infection in injury; Henry H. Kessler, Newark, N. J., "Rehabilitation," and Mr. Murray Nathan, Albany, "Placement of the Handicapped." In the afternoon Dr. Frank H. Lahey, Boston, President of the American Medical Association, will give an address on "Diseases of the Thyroid Gland." Dr. Samuel J. Kopetzky, New York, president of the state medical society, will make an address at a luncheon meeting of the Woman's Auxiliary.

New York City

Promotions at Long Island College.—The following promotions on the faculty of Long Island College of Medicine were recently announced:

Dr. Fred L. Moore, professor of preventive medicine and community health, succeeding Dr. Alfred E. Shipley.
Dr. Ralph M. Beach, professor of clinical obstetrics and gynecology, succeeding Dr. O. Paul Humpstone.
Dr. Louis C. Johnson, clinical professor of medicine.
Drs. Milton B. Handelsman, Milton B. Plotz, Charles G. Williamson and Burton L. Zohman, assistant clinical professors of medicine.
Drs. William H. Field and David Dexter Davis, assistant clinical professors of surgery.

Lectures on Disease in the Aged.—The Home for Aged and Infirm Hebrews of New York announces six clinical lectures on "Disease of the Aged" for the medical profession to be given by Dr. Frederic D. Zeman, attending physician to the home. The series will be given on successive Thursdays as follows:

November 6, The Clinical Picture of Disease in the Aged.
November 13, Cardiovascular Disorders in Advanced Age.
November 27, Neoplastic Diseases in Old Age.
December 4, The Mind and Its Disorders in the Old.
December 11, Surgery After Sixty.
December 18, The Physical and Mental Hygiene of Old Age.

PENNSYLVANIA

Psychiatric Meeting.—The Pennsylvania Psychiatric Society held its third annual meeting, October 9, at the Hotel William Penn, Pittsburgh. Lieut. Col. William C. Porter, Washington, D. C., M. C., U. S. Army, spoke on "Psychiatry and the National Defense."

Philadelphia

Conferences on School Health.—The American Academy of Pediatrics will sponsor a series of meetings on school health for parents, October 27-29, in selected schools in Philadelphia. The meetings will be developed by the academy's committee for cooperation with nonmedical groups, the school authorities and the parent-teacher organizations. The program will consist of panel discussions by physicians, a motion picture and a forum for health questions. Dr. Ernest L. Noone, Drexel Hill, is chairman of the Pennsylvania committee on cooperation with nonmedical groups.

Testimonial Dinner to Dr. Meeker.—George H. Meeker, Ph.D., dean emeritus of the University of Pennsylvania Graduate School of Medicine, was honored at a testimonial dinner, September 29, marking his retirement as dean. Dr. George M. Coates was chairman, and Dr. George Morris Piersol, toastmaster. Thomas S. Gates, LL.D., president and Dr. Alfred N. Richards, vice president for medical affairs, spoke for the university, Dr. William R. Nicholson for the graduate school and Dr. George E. Pfahler for the Medico-Chirurgical College of Philadelphia, where Dr. Meeker taught before the school was taken over by the university. Other speakers included the deans of the five medical schools in Philadelphia, the director of the department of public health and Dr. Meeker. Dr. Meeker took his Ph.D. degree at Lafayette College, Easton, Pa., and the degrees of Pharm.D. and D.D.S. at the Medico-Chirurgical College. He has received honorary degrees from Ursinus (Collegeville, Pa.), Lafayette and Villanova (Pa.) colleges and from the University of Pennsylvania. He taught at the Medico-Chirurgical College from 1897 to 1916 and was professor of chemistry in the University of Pennsylvania School of Medicine from 1916 to 1940. He established the graduate school in 1918 and was dean from its opening in 1919 until his retirement this year. From 1924 to 1928 he was director of the Graduate Hospital.

WASHINGTON

New Health Unit.—A health unit has been established in Kitsap County, with headquarters in Bremerton. Dr. Harold M. Graning of the U. S. Public Health Service, San Francisco, organized the unit. Dr. Russell H. Wilson, Bremerton, also lent by the public health service, was to take over the department when Dr. Graning was recalled to active duty with the service.

Society News.—A symposium on treatment of shock was presented at a meeting of the Spokane County Medical Society, Spokane, October 9, by Drs. Robert J. Kearns, Alexander R. MacKay, Russell B. Hanford, William S. Butts and George A. C. Snyder. All are from Spokane.——Speakers at a meeting of the King County Medical Society, Seattle, September 15, were Drs. Brien T. King, Charles B. Ward and Sylvester N. Berens, who discussed postoperative exophthalmos; Charles D. Kimball and Nathan K. Rickles, stilbestrol.

GENERAL

Prize in Thoracic Surgery.—The American Association for Thoracic Surgery announces that the Rose Lampert Graff Foundation prize of $250 will be awarded in 1942 for the best paper dealing with the physiology, pathology, anatomy or therapy of the chest. The competition is open to nonmembers of the association as well as to members. The paper should be submitted to Dr. Richard H. Meade Jr., 2116 Pine Street, Philadelphia, before Feb. 1, 1942. Papers should not bear the name of the author but should be accompanied by an envelop enclosing the name.

Roentgen Ray Election and Award of Medal.—Dr. Ralph S. Bromer, Bryn Mawr, Pa., was chosen president-elect of the American Roentgen Ray Society at its annual meeting in September in Cincinnati, and Dr. William M. Doughty, Cincinnati, was installed as president. Other officers include Drs. Frederick W. O'Brien, Boston, and Fred J. Hodges, Ann Arbor, Mich., vice presidents; Harold Dabney Kerr, Iowa City, Iowa, secretary; James B. Edwards, Leonia, N. J., treasurer. Dr. John H. Lawrence, assistant professor of medicine, University of California Medical School, San Francisco, and in charge of medical investigations with the cyclotron at the university, who gave the Caldwell lecture at this meeting, was presented with the annual medal of the society.

Lectures by British Psychiatrist.—Dates for a series of lectures in the United States and Canada by Dr. Robert D. Gillespie, London, psychiatric specialist of the Royal Air Force of Great Britain, have been announced by the Salmon Committee on Psychiatry and Mental Hygiene of the New York Academy of Medicine. Dr. Gillespie will deliver the Salmon Lectures at the Academy, November 17-18, and in several other cities will speak under the auspices of the Salmon Committee and local organizations. The cities and dates are Toronto, Ont., November 19, Chicago November 21, New Orleans November 22, San Francisco November 27 and Philadelphia November 30. Dr. Gillespie will also confer with the U. S. Army and Navy Joint Committee on Recreation and Welfare. The general subject of his lectures will be "Psychoneuroses in Peace and War and the Future of Human Relationships."

Resources for Civilian Defense.—The U. S. Director of the Office of Civilian Defense, Mayor La Guardia of New York, and the chairman of the American National Red Cross, Mr. Norman H. Davis of Washington, D. C., issued a joint statement recently urging state and local defense councils to acquaint themselves with the resources of local Red Cross chapters in providing food, shelter, clothing, nursing care, transportation and other basic necessities and to integrate these resources into the local program. Duplication of trained and experienced personnel and of available supplies of the Red Cross should be avoided except where supplementation is essential to meet the anticipated needs of the community. The statement emphasizes that state and local defense councils are the official agencies responsible for the coordination of all available resources which may be required for civilian protection in the event of belligerent action.

Motion Picture on Syphilis.—A motion picture film in natural color and sound on the subject of syphilis has just been announced by the U. S. Public Health Service, Washington, D. C. The picture, produced for physicians and medical

students, is in three parts: (1) the diagnosis of early syphilis, (2) the diagnosis of late and latent syphilis, (3) the management of syphilis. Each part of the picture is complete in itself, although the three parts together form an interlocking presentation. Thus when time for the entire film is not available at any one medical meeting or in teaching medical students, one or more parts may be used by itself. The film is particularly adapted for such meetings and is of especial importance in teaching undergraduates and in postgraduate courses. The film is available for either purchase or loan from the U. S. Public Health Service. The following are listed as the medical consultants:

Harold N. Cole, M.D., Cleveland.
Joseph E. Moore, M.D., Baltimore.
Paul A. O'Leary, M.D., Rochester, Minn.
Thomas Parran, M.D., Surgeon General, U. S. P. H. S., Washington, D. C.
Francis E. Senear, M.D., Chicago.
John H. Stokes, M.D., Philadelphia.
Lula J. Usilton, M.A., U. S. P. H. S., Washington, D. C.
Raymond A. Vonderlehr, M.D., Assistant Surgeon General, U. S. P. H. S., Washington, D. C.

Look Out for Check Counterfeiter.—Cooperation is requested in the apprehension of one Marvin Levinsohn, alias Martin Davis, passer of counterfeit checks on the "Quartermaster Bank of the United States." Levinsohn is suffering from tuberculosis and periodically seeks pneumothorax treatments. He victimized a physician in Philadelphia with a check for $14 receiving $9 in change, the fee being $5 for the treatment. The physician said Levinsohn is in need of such treatments at least once every three weeks. Levinsohn also defrauded a physician in New York on September 23. The

physician made a fluoroscopic examination and gave him hypodermic injections. He accepted Levinsohn's check for $14 and gave him $11 in cash. Levinsohn insisted that the physician examine his credentials and warned him to be careful in accepting army checks. In all instances in which he passed checks, Levinsohn seems to have used the one amount of $14. Levinsohn was arrested on March 21, 1938 in Providence, R. I., and sentenced to three years in Lewisburg Penitentiary for negotiating counterfeit checks purporting to have been issued by the Finance Department, U. S. Army. He was first arrested on Feb. 18, 1929 in Baltimore for passing similar checks and apprehended on Oct. 4, 1933 in Philadelphia on the same charge. In each instance he surrendered to army authorities as a deserter. One alias he used was "L. J. Marsden, Lt. Col., Finance Dept., U. S. A." In his former operations he changed the name of the payee in typing out the checks, the amount EXACTLY FOURTEEN DOLLARS AND NO CENTS being typed with a red ribbon. This legend on the new checks is also typed in red. Levinsohn is about 41 years of age, about 5 feet 8 inches tall and weighs about 135 pounds. He has a long nose and on occasion wears a small dark mustache. He is a convincing talker and usually appears in an army uniform. Physicians are urged to notify the U. S. Secret Service office in their district should Levinsohn come to their attention.

Orthopedic Nursing Advisory Service.—The National Foundation for Infantile Paralysis has given a grant to the National Organization for Public Health Nursing and the National League of Nursing Education for a joint advisory service in orthopedic nursing, to be available to nurses in all fields. The orthopedic service of the National Organization for Public Health Nursing, financed by the National Foundation for Infantile Paralysis, now becomes a joint service with the National League of Nursing Education and will be sponsored by the Joint Council on Orthopedic Nursing of the two organizations. Representation from the league has been added to what was formerly the committee on orthopedic scholarships of the National Organization for Public Health Nursing, and the joint committee will now administer the scholarships of both organizations. According to an announcement, the purpose of the joint service is:

1. To encourage nurses with desirable qualifications to prepare themselves for the field of orthopedic nursing, especially for positions in teaching and supervision.
2. To stimulate better use of facilities and resources for teaching orthopedic nursing in hospitals, public health nursing agencies and universities.
3. To aid in the development of centers where nurses can be sent to practice orthopedic nursing under supervision.
4. To prepare educational material in orthopedic nursing.
5. To give assistance concerning content and method of staff education in orthopedic nursing.

LATIN AMERICA

Latin American Visitors to Health Meeting.—The following public health officials from the American republics were guests of the United States government at the meeting of the American Public Health Association in Atlantic City, N. J., October 14-17. According to an announcement from the Office of the Coordinator of Inter-American Affairs, Washington, D. C., the visitors, after a visit to the Capitol, will be taken on a tour of the United States public health and medical institutions by members of the American Public Health Association and representatives of the Pan American Sanitary Bureau. The group includes:

Dr. Hugo D'Amato, secretary of national department of health, Buenos Aires, Argentina.
Dr. Abelardo Ibánez Benavente, minister of public health, La Paz, Bolivia.
Dr. João Barros Barreto, director general of public health, Rio de Janeiro, Brazil.
Dr. Salvador Allende, minister of health and social welfare, and Dr. Alejandro Flores, adviser to the minister of health and social welfare, Santiago, Chile.
Dr. Roberto Franco, counselor of the Colombian Embassy in Washington, and Dr. Juan A. Montoya, member of National Institute of Health, Bogotá, Colombia.
Dr. Mario Luján, secretary of public health and social welfare, San José, Costa Rica.
Dr. Domingo Ramos, minister of national defense, and Dr. Sergio M. Garcia-Marruz, minister of public health, Cuba.
Dr. Wenceslao Medrano, minister of health and social welfare, Ciudad Trujillo, Dominican Republic.
Dr. Juan A. Montalván, assistant director of health, Guayaquil, Ecuador.
Dr. Victor Sutter, national director of health, San Salvador, El Salvador.
Dr. Carlos Estévez, director general of public health, Guatemala City, Guatemala.
Dr. Rulx León, formerly undersecretary of public health, Port-au-Prince, Haiti.
Dr. Pedro Ordóñez Díaz, national director of public health, Tegucigalpa, Honduras.
Dr. Mario Quiñones, secretary of department of health, and Dr. Angel de la Garza Brito, director of school of public health, Mexico City, Mexico.
Dr. Luis M. Debayle, national director of public health, Managua, Nicaragua.
Dr. Carlos Brin, Ambassador of Panama to the United States, Washington, D. C.
Dr. Raúl Peña, director of public health, Asuncion, Paraguay.
Dr. J. M. Estrella Ruiz, director of public health, Lima, Peru.
Dr. Juan C. Mussio Fournier, minister of public health, Montevideo, Uruguay.
Dr. A. Castillo Plaza, director of public health, Caracas, Venezuela.

FOREIGN

Jewish Physicians Restricted in Unoccupied France.—The New York *Times* reported recently that a decree was issued in Vichy, France, September 6, setting the proportion of Jewish to non-Jewish physicians at 2 per cent. Exemption is provided for Jews who have rendered signal service to France, the dispatch said. The law affects Jews of French nationality; those of foreign birth were barred from practice several months ago.

Personal.—Sir John H. Hebb has retired from the positions of director general of the emergency medical service of the Ministry of Health and director general of medical services of the Ministry of Pensions, the *British Medical Journal* reports. His successor at the Ministry of Health is Prof. Francis R. Fraser, who has been acting in that capacity for some time, it was said. Sir William Wilson Jameson, chief medical officer of the Ministry of Health, will continue to be responsible for the coordination of the emergency medical and hospital services with the general medical and hospital services of the ministry, according to the journal. Sir John Hebb has agreed to continue to make his services available to the Ministry of Pensions.—Dr. Winifred C. Cullis, professor of physiology at the London School of Medicine for Women, has retired with the title of emeritus. She has been succeeded by Dr. Esther M. Killick, lecturer in industrial physiology at the London School of Hygiene and Tropical Medicine.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 23, 1941.

Can Sea Water Be Used to Quench Thirst?

The indiscriminate sinking of ships by submarines and the ignoring of the regulations of international law for the protection of the passengers and crew have revived an old problem. The survivors crowd into open boats, often with a supply of drinking water inadequate for the days which may elapse before rescue. The *British Medical Journal* recalls that in its issue of Nov. 15, 1924 a surgeon, Mr. W. Bernard Secretan, wrote concerning two letters which had appeared in the issue of Feb. 16, 1918 advocating rectal injections of sea water for the alleviation of thirst. One was written by Mr. Morley Roberts, to whom the idea occurred in 1910. He recommended that a Higginson syringe should form part of a lifeboat's equipment. The other correspondent was a surgeon, Mr. George Wherry, of Cambridge, who independently suggested the slow injection of sea water. Secretan asked "Is hypertonic saline or a saturation akin to salt water tolerated by the bowel, and will water be absorbed from it in the colon, as in the case of normal saline; or will it produce, as in the case of purgative salts held in hypertonic solution in the intestine, a flow of fluid from the tissues into the bowel?" The *British Medical Journal* is unable to answer the question but states that a pharmacologist to whom it was referred said that the body would be bound to lose water on the transaction, with intensification of thirst, because the highest recorded concentration of sodium chloride in the urine after taking by mouth large amounts of concentrated salt solution was 1.6 per cent, whereas sea water contains 2.7 per cent sodium chloride

In the *Times* other suggestions are made. One is that every lifeboat should be equipped with a still, but it has not been worked out whether the apparatus and its fuel would be more economical than the same weight and bulk allotted to drinking water such as every lifeboat carries. Another correspondent remarks that when perspiration is heavy slightly salt water is a more refreshing drink than fresh water and suggests diluting the drinking water with as much sea water as taste can stand, in order to eke out supplies. Dr. Frisch, who devised a chemicophysical process for obtaining fresh water from sea water, points out that two British scientists, B. A. Adams and E. L. Holmes, previously devised another process, the patent for which was acquired by a German concern, which now uses it in the Baltic. Another correspondent suggests a still to be heated electrically, the power to be derived from a wind motor or in calm weather from manual power. But none of the many suggestions appear ever to have been put to a practical test.

The Treatment of Maxillofacial Wounds

The War Office has issued a memorandum on the preliminary treatment of maxillofacial wounds. Only first aid treatment is possible until the main dressing station is reached, which may be some hours after wounding. Early treatment is directed to saving life, the two main aims being to prevent suffocation and control hemorrhage. Loss of control of the tongue or displacement of bony tissue may obstruct the air passages. Attention should be paid to the possible presence of foreign bodies, such as fragments of teeth or dentures, which should be removed. Posture is of vital importance; the patient should be placed on the stretcher prone or semiprone to prevent the tongue from falling back. If sitting up or able to walk, he should do so with the head bent forward and downward. Correct posture will help to control hemorrhage by keeping the tongue forward. Ligation of visible bleeding vessels may be practicable at the advanced dressing station. The ordinary four tailed bandage should never be used unless applied under the chin, as it is likely to increase the displacement of the fragments by backward pressure. In all cases the bandage should be applied under the chin so as to give gentle upward support. The main dressing or casualty clearing station is the first place where a dental officer will be available, and his cooperation should always be sought. After attention to shock, hemorrhage and respiration, roentgen examination should be made. In operative treatment the throat should be packed with one piece of 6 inch roll gauze during intratracheal anesthesia until the jaws are ready for intermaxillary wiring. As far as possible accurate apposition of fragments should be carried out. A tooth in the line of fracture should be extracted except when there is only one tooth on the distal fragment which might temporarily assist in control. Only the smallest bony fragments which are completely separated from periosteal attachments should be removed. In compound fracture of the mandible, suture of the lip should not be attempted until complete reposition of the fragments has been attained. At the first opportunity the patient should be evacuated to a maxillofacial hospital.

Planning for Mental Health

Three years ago the Council of the British Medical Association set up a committee to inquire into the medical equipment and provision for dealing with mental health, especially the prophylaxis and treatment of psychoneurotic and allied disorders. The work was virtually completed before the outbreak of war; only the consideration of the report remained. This has now been completed. The inquiry was chiefly directed to the psychoneuroses, but the psychotic cases could not be left out of consideration. The committee found it impossible to define exactly any criterion of mental illness and had to depend chiefly on "the manifestation of symptoms rather than on more scientific criteria in diagnosing the disorder." In 1938 in England and Wales 158,723 persons were notified as under care for mental disorder and 89,904 mentally defective persons. But the committee was more concerned with persons suffering from mental illness who had not been certified. In many parts of the country there was no one in private or hospital practice to care for such patients. Estimates as to the amount of psychoneuroses in the country varied widely. The committee concluded that in any group of sick persons something like 30 per cent suffer from conditions about which psychiatric advice, if not treatment, would be helpful.

Among the recommendations are education of mothers, nurses and teachers in the management of young children. This would materially lessen the incidence of psychoneuroses. So would training the growing child how to live and manage its instinctive urges. Advice should be sought in the early stage of mental illness. The better education of the general practitioner so that he may protect and guide his patients from their earliest years is an urgent requirement. There is need for specialized accommodation and treatment of acute mental illness with a prospect of recovery. Many more physicians should be trained in modern psychiatry. Every hospital with more than a hundred beds should have at least one medical psychologist.

Medical Officers for the Home Guard

The Home Guard is formed of men engaged in civilian work or retired who receive military training in their spare time. Many of them are past the military age, and some are old soldiers. The Home Guard was formed for the defense of the country in case of invasion and is now an efficient force for the purpose and to be found in every part of the country. Its organization has more and more approximated that of the regular army. The latest development is the medical service. Each battalion has now its own medical officer with the rank of major. His duty is to advise on the training of stretcher parties and on the medical organization of the battalion in con-

sultation with the civil defense authorities. At the headquarters of each Home Guard zone is a medical officer with the rank of lieutenant colonel, who coordinates the medical organization of the battalions in his area with the civil defense authorities. Each platoon has a first aid outfit, and its casualties are taken to the nearest first aid post of the civil defense organization and thence to the nearest casualty clearing station and, if sufficiently serious, to the nearest hospital under civil defense arrangements.

Control of the Distribution of Milk

With the continuance of the war, further restrictions must be expected. The latest is a priority scheme for the distribution of milk, which will be introduced during October. A child and an expectant mother are allowed 7 pints weekly, but other consumers only 3½. Invalids will have special allowances, which remain to be determined. These regulations follow the fundamental principle of our food control—that people shall obtain the necessary foods according to their needs and not according to their purses.

BUENOS AIRES

(From a Special Correspondent)

July 5, 1941.

Control of Venereal Diseases

In Bolivia a division for venereal control has been created in the department of health by presidential decree. Every person affected with the disease in the infective stage must accept treatment. Patients prematurely discontinuing treatment must be reported by the physicians who treated them. An infected person cognizant of his condition and causing infection in others must defray the expenses of treatment of the infected person. The penalty for refusal to do so is set at two years' imprisonment. Alcoholic beverages may not be dispensed in brothels. Sources of infection must be reported by the physicians. Certificates are issued premaritally on request. Medicaments for the treatment of the disease may be secured only on medical prescription.

In La Paz a league against venereal dangers (Liga contra el peligro venéreo) has been organized within the ministry of health. Its purpose is to support the government in its fight on venereal diseases by means of publicity and health education.

In the management of syphilis, increased attention is being given to Chediak's microreaction. Prof. P. L. Baliña, director of the clinic of cutaneous diseases of the university of Buenos Aires, and his associates compared the results obtained by this technic in 657 persons of both sexes and of different ages with the results obtained by the Wassermann and Kahn technics. In 131 cases of syphilis the Chediak test gave a positive reaction of 70.99 per cent and surpassed the Wassermann reaction by 12.91 per cent and the Kahn test by 8.40 per cent. In the remaining 526 nonsyphilitic cases the Chediak test was positive in 0.38 per cent. Here there was no difference between the three tests. Its simplicity, specificity and sensitization makes the Chediak test a valuable diagnostic aid for syphilis. It is also used for differential diagnosis in certain clinical forms of leprosy, in which other tests give only pseudopositive results.

According to Dr. Mario Renella, Córdoba, the Chediak test agreed with the Kahn test in 194 (96.51 per cent) of 217 cases and with the Wassermann test in 197 (91.24 per cent) cases. The Chediak test was thus 3.09 per cent more accurate than the Kahn test. In 25 cases of tuberculosis, typhoid, pneumonia and diphtheria the Chediak test was always negative. The Chediak test requires less material, time and personnel than other tests. Under certain conditions the test can be used for medicolegal purposes in cases in which the blood spots are less than twenty days old. Dr. A. Peralta Ramos, professor of gynecology in Buenos Aires, together with C. M. Parzizza tried the test out in 6,745 cases and found Chediak's microreaction practical, specific and disclosing a 0.77 per cent greater sensitization than the standard Kahn technic.

M. A. Freire and S. Pieri of Córdoba, Argentina, used sulfanilamide vaginally in the treatment of gonorrhea in children. The drug was administered daily by instillation in a 25 to 50 per cent solution. Alkalinity was obtained by adding sodium bicarbonate. Excellent results were obtained in 10 of 20 girls under 10 years of age who completed the treatment.

Venereal lymphogranuloma is also receiving greater attention. Prof. Carlos Alberto Videla, professor of infectious diseases in Buenos Aires, and his associate E. S. Pedace succeeded in reproducing the disease experimentally. They determined the systemic diffusion of the virus in the human body by obtaining similar results in rabbits, guinea pigs and other animals with inoculations derived from various parts of the body. An issue of the *Revista Uruguaya de Dermatología y Sifilografía* is given to the discussion of this disease. It seems that this disease is spreading in Uruguay. Prof. José May, who first observed it in 1922, reported that he encounters 150 cases annually in Uruguay. In Colombia, venereal lymphogranuloma was unknown several years ago. It is now investigated because of its intensity and the variety of its manifestations. The spread of the disease is attributed to prostitutes.

Personal

Dr. E. Braun Menéndez, who was trained under Prof. B. A. Houssay, has been selected by the University of California to deliver the Morries Herzstein lectures in 1942. Menéndez's special field is that of renal hypertension.

A new method of practical instruction in physiology is to be tried out by Professor Houssay. Twenty third year students are to be specially trained to qualify them to assist in teaching other students. They are selected on the basis of examinations in foreign languages, algebra and general biology and must work in the institute five times a week.

Victims of the Nazi invasion of France include two Nobel prize winners, the radium investigators Joliot-Curie, husband and wife, who are seeking to transfer their scientific labors to Buenos Aires. The faculty of medicine of the University of Buenos Aires has invited them to conduct a series of lectures on radium.

Deaths

Dr. Luis M. Allende, professor of clinical surgery and orthopedics in the faculty of medicine of Córdoba, is dead.

Dr. Leopoldo Uriarte, whose name is associated with plague control in Paraguay (1899) and in northern Argentina (1919), died March 20.

Marriages

JOHN EMANUEL DOTTERER, State College, Pa., to DR. ELIZABETH MCCAULEY JAMES of Sanford, N. C., August 19.

MARVIN HAYNE KENDRICK, Jacksonville, Fla., to Miss Barbara Barrett Truesdell of New York, September 6.

FRANCIS DUNCAN GIBSON JR., Gibson, N. C., to Miss Ruth Pearle Gambrell of Greenville, S. C., recently.

GORDON KEITH ROGERS, Belzoni, Miss., to Miss Josephine McKelvey of Franklin, Tenn., in August.

ROBERT LICH JR., Louisville, Ky., to Miss Edna Haskell Troutman of Nelsonville, September 24.

GEORGE M. STROUD III, Cleveland, to Miss Doris Irene Kramer of Akron, Ohio, August 16.

WILLIAM ALLEN EXUM, Snow Hill, N. C., to Miss Norma Selden at Roaring Gap, August 27.

FRED B. HODGES JR., Austell, Ga., to Miss Shirley Rowe of Carrollton in Atlanta, August 21.

HENRY S. BROWNE to Mrs. Willie Myers Broach, both of Tulsa, Okla., August 16.

Deaths

Louis Faugeres Bishop Sr. ✠ New York; College of Physicians and Surgeons, medical department of Columbia College, New York, 1889; past president of the American Therapeutic Society; fellow of the American College of Physicians; member of the National Gastroenterological Association; secretary of the New York Academy of Medicine from 1895 to 1903; at one time professor of heart and circulatory diseases, Fordham University School of Medicine; formerly consulting physician to the Mercy Hospital, Hempstead; consultant on diseases of the heart, Lincoln Hospital; consulting cardiologist, Sea View Hospital, Staten Island, and the Goshen (N. Y.) Hospital; director of the New York School for the Deaf; trustee of Rutgers University, New Brunswick, N. J., and the Museum of the American Indian, New York; author of "Heart Disease, Blood Pressure and the Nauheim Treatment," "Arteriosclerosis," "Heart Troubles, Their Prevention and Relief," "A Key to the Electrocardiograms," and "History of Cardiology" and "Mechanism of the Heart and Its Anomalies," translated from the French; aged 77; died, October 6, of pneumonia.

Jarvis Gipson Dean, Dawson, Ga.; University of the City of New York Medical Department, New York, 1885; member and past president of the Medical Association of Georgia; past president of the Terrell County Medical Society; at one time member of the state board of health; formerly mayor; for many years member of the board of education; aged 83; died, September 11.

Joseph Wiener ✠ Asbury Park, N. J.; University of Maryland School of Medicine, and College of Physicians and Surgeons, Baltimore, 1925; fellow of the American College of Physicians; on the staffs of the Fitkin Memorial Hospital, Neptune, and the Monmouth Memorial Hospital, Long Branch; aged 39; died, September 8, of coronary thrombosis.

Robert Milligan Coleman, Lexington, Ky.; University of Virginia Department of Medicine, Charlottesville, 1901; formerly assistant demonstrator of anatomy at his alma mater; member of the Kentucky State Medical Association; served during the World War; aged 63; died, September 7, of bronchiogenic carcinoma of the right lung.

James Arthur Barnes ✠ Worcester, Mass.; Harvard Medical School, Boston, 1900; fellow of the American College of Surgeons; at one time chairman of the board of directors of the city public library; aged 69; on the staff of St. Vincent's Hospital, where he died, September 6, of cerebral hemorrhage and arteriosclerosis.

Millard Davis Hoskins, Chevrolet, Ky.; Hospital College of Medicine, Louisville, 1905; member of the Kentucky State Medical Association; at one time health officer of Bell County and mayor of Pineville; served during the World War; aged 57; died, September 4, at St. Joseph's Infirmary, Louisville, of acute pancreatitis.

John Patrick Henry Murphy, Washington, D. C.; Tufts College Medical School, Boston, 1910; member of the Medical Society of the District of Columbia; member of the New England Society of Psychiatry; aged 62; on the staff of St. Elizabeths Hospital, where he died, September 19, of bronchopneumonia.

Thomas Branch Alexander, Scituate, Mass.; Baltimore Medical College, 1901; member of the Massachusetts Medical Society; past president of the Norfolk South District Medical Society; acting assistant surgeon, United States Public Health Service; aged 65; died, August 28, of carcinoma of the prostate.

William Leonard Evans, Hanover, Ohio; Starling Medical College, Columbus, 1903; member of the Ohio State Medical Association; mayor; president of the county board of education; aged 61; died, September 10, in the City Hospital, Newark, of arteriosclerosis, hypertension and encephalitis.

Frederic Charles Hargrave ✠ Pasadena, Calif.; New York University Medical College, New York, 1896; an Affiliate Fellow of the American Medical Association; member of the Medical Society of the State of New York; aged 70; died, September 16, of carcinoma of the stomach.

Eilau Vance Boram, Muncie, Ind.; Medical College of Indiana, Indianapolis, 1898; member of the Indiana State Medical Association; on the staff of the Ball Memorial Hospital; aged 64; died, September 28, of hemorrhage from an intestinal ulcer, following gastroenterostomy.

Jeremiah Emmet Leahy, Chicago; Jefferson Medical College of Philadelphia, 1896; veteran of the Spanish-American War; clinical assistant in surgery at Northwestern University Medical School from 1910 to 1913; aged 70; died, September 13, of coronary thrombosis and arteriosclerosis.

Sol Stein Kaufman, Crowley, La.; University of Illinois College of Medicine, Chicago, 1931; member of the Louisiana State Medical Society; on the staff of the Legion Memorial Hospital; aged 34; died in September in the John Sealy Hospital, Galveston, Tex., of acute nephritis.

Alfred Theodore Eide ✠ Lake Placid, Fla.; Chicago College of Medicine and Surgery, 1908; served during the World War; formerly member of the state legislature; aged 56; died, September 7, in the Veterans Administration Facility, Bay Pines, of chronic endocarditis.

James Joseph Fitzgerald, Stanhope, N. J.; St. Louis University School of Medicine, 1912; formerly a member of the staff of the Illinois Department of Public Health and city physician of Granite City, Ill.; aged 53; died, September 16, of heart disease and pneumonia.

William Henry Gray, Mystic, Conn.; College of Physicians and Surgeons, medical department of Columbia College, New York, 1889; member of the Connecticut State Medical Society; aged 79; died, July 17, of cerebral thrombosis and cerebral arteriosclerosis.

Ralph Joseph Karrasch, Chicago; Loyola University School of Medicine, Chicago, 1936; member of the Illinois State Medical Society; aged 32; died, July 30, at Martha Washington Hospital of bilateral apical pneumonia with streptococcic infection.

Peter Paul Baron ✠ Alameda, Calif.; College of Physicians and Surgeons, Los Angeles, 1918; served during the World War; formerly city health officer of Dorris and Alameda; aged 49; died, September 16, of gastrointestinal hemorrhages.

John Allison Schram, St. Joseph, Mich.; Indiana University School of Medicine, Indianapolis, 1931; member of the Michigan State Medical Society; aged 38; was found dead, September 9, of accidental asphyxiation with ethyl chloride.

Hans Schneider, Dousman, Wis.; Marquette University School of Medicine, Milwaukee, 1928; member of the State Medical Society of Wisconsin; aged 39; was found dead in his garage, September 18, of carbon monoxide poisoning.

Christian Gottlieb Hacker ✠ Albany, N. Y.; Albany Medical College, 1899; fellow of the American College of Surgeons; aged 64; died, September 20, in the Clifton Springs (N. Y.) Sanitarium of arteriosclerosis and heart disease.

Gideon Cross Segur, Hartford, Conn.; College of Physicians and Surgeons, medical department of Columbia College, New York, 1882; member of the Connecticut State Medical Society; aged 90; died, August 31, of arteriosclerosis.

Eugene S. Hannum, Cleveland; Western Reserve University Medical Department, Cleveland, 1892; member of the Ohio State Medical Association; aged 82; died, September 1, of arteriosclerosis, hypertension and gastric hemorrhage.

Roger Ruben Wagoner, Columbus, Ga.; University of Georgia Medical Department, Augusta, 1931; served during the World War; aged 41; on the staff of the Bush Hospital, where he died, September 7, of coronary thrombosis.

Leo J. Rostow, Philadelphia; Medico-Chirurgical College of Philadelphia, 1905; aged 71; formerly on the staff of the Northern Liberties Hospital, where he died, September 3, of diabetes mellitus and empyema of the gallbladder.

James Albert Potter, Washington, D. C.; Howard University College of Medicine, Washington, 1906; member of the Medical Society of the District of Columbia; aged 64; died, August 27, in Minneapolis of coronary sclerosis.

R. A. Byers, Horse Branch, Ky.; Louisville Medical College, 1903; formerly member of the county board of education; state senator; aged 69; died, September 11, at St. Anthony's Hospital, Louisville, of cerebral hemorrhage.

Harry Brayton Townsend, Penn Yan, N. Y.; Bellevue Hospital Medical College, New York, 1893; member of the Medical Society of the State of New York; aged 70; died, September 18, of cardiac valvular disease.

James Caldan Denman, Franklinton, La.; Memphis (Tenn.) Hospital Medical College, 1905; member of the Louisiana State Medical Society; aged 66; was killed, September 13, near Leland, Miss., in an automobile accident.

Walter S. Wing ✠ Oconomowoc, Wis.; Northwestern University Medical School, Chicago, 1900; bank president; aged 67; died, September 20, in the Summit Hospital, of coronary sclerosis.

Joseph **Francis Barry,** Chaptico, Md.; University of Maryland School of Medicine, Baltimore, 1908; aged 64; died, September 17, in the Central Dispensary and Emergency Hospital, Washington, D. C., of urinary calculi.

Louis **Edward Fuller,** Danville, Va.; University of Louisville (Ky.) Medical Department, 1894; aged 69; died, September 1, in the Danville Community Hospital of cerebral hemorrhage and hypertension.

Glendie Bedford Young, Washington, D. C.; Columbian University Medical Department, Washington, 1888; veteran of the Spanish-American and World wars; aged 77; died, September 6, of heart disease.

George **Irwin Garrison,** Oklahoma City; Jefferson Medical College of Philadelphia, 1886; aged 90; died, September 13, in the Oklahoma City General Hospital of complications following fracture of the hip.

Joseph **Aloysius Conaty Jr.,** Los Angeles; College of Physicians and Surgeons, Los Angeles, 1920; aged 48; on the staff of St. Vincent's Hospital, where he died, August 31, of carcinoma of the lung.

Holland **M. Carter,** Smoaks, S. C.; Medical College of the State of South Carolina, Charleston, 1903; member of the South Carolina Medical Association; aged 64; died, September 11, of pneumonia.

John **A. Baker,** Farmville, Va.; Leonard Medical School, Raleigh, N. C., 1909; aged 60; on the staff of the Southside Community Hospital, where he died, September 1, of carcinoma of the stomach.

Frederick Riley Wilson, Halfway, Ore.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1909; aged 65; died, August 31, of coronary occlusion.

Edward **A. Baxter,** Melbourne, Ark.; University of Louisville (Ky.) Medical Department, 1879; at one time county health officer and county coroner; aged 88; died, September 12, of carcinoma.

Evelyn Leon Adkins, Penalosa, Kan.; Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1908; member of the Kansas Medical Society; aged 68; died, August 5.

Edward Foster Wolfe, Covington, Ky.; Louisville (Ky.) Medical College, 1898; member of the Kentucky State Medical Association; aged 69; died, September 6, of coronary thrombosis.

Glen Edrie Macklem, Miami, Fla.; University of Louisville (Ky.) Medical Department, 1908; aged 58; died, August 29, in Detroit, Mich., of coronary occlusion and arteriosclerosis.

Edwin T. Davis, Bound Brook, N. J.; Hahnemann Medical College of Philadelphia, 1882; aged 82; died in August in the Somerset Hospital, Somerville, of injuries received in a fall.

Jefferson Beri Mooney, Scooba, Miss.; Louisville (Ky.) Medical College, 1890; aged 73; died, August 10, in the Veterans Administration Facility, Gulfport, of cerebral hemorrhage.

Lawrence Charles Hess, Shanghai, China; University of Buffalo School of Medicine, 1936; was associated with the China Inland Mission; aged 30; died, August 29, of carbuncle.

Absalom J. Welch, McAlester, Okla.; Starling Medical College, Columbus, 1881; member of the Oklahoma State Medical Association; aged 84; died, September 15, of senility.

Isaiah **Francis Carroll,** Springdale, Conn.; Baltimore Medical College, 1906; aged 67; died, August 28, of gastric hemorrhage, cirrhosis of the liver and pernicious anemia.

Frank Grey Snyder ✠ York, Neb.; Barnes Medical College, St. Louis, 1897; on the staff of the Lutheran Hospital; aged 66; died, September 2, of coronary thrombosis.

Harry **Urban North,** Philadelphia; Jefferson Medical College of Philadelphia, 1903; aged 62; died, August 28, in the Presbyterian Hospital of gastric hemorrhage.

Barney **Nosanchuk** ✠ Detroit; Wayne University College of Medicine, Detroit, 1934; aged 33; was found dead, September 9, of an overdose of ether, self administered.

George **Herbert Harkin,** Rochester, N. Y.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1921; aged 46; died, July 28, of rheumatic endocarditis.

John **Patrick Conroy,** New York; Bellevue Hospital Medical College, New York, 1893; at one time district superintendent of schools; aged 80; died, September 13.

Dorothy **Child** ✠ Philadelphia; Johns Hopkins University School of Medicine, Baltimore, 1914; aged 53; was drowned, September 27, following an explosion on a yacht.

Allen J. M. Howard, Cleveland; Howard University College of Medicine, Washington, D. C., 1893; aged 77; died, September 1, of myocarditis and arteriosclerosis.

Edith Johnson Thomas, Uhrichsville, Ohio; College of Medicine and Surgery (Physio-Medical), Chicago, 1899; aged 82; died, September 2, of hypostatic pneumonia.

Louis Carswell Williams, Lambertville, N. J.; Jefferson Medical College of Philadelphia, 1901; aged 64; died, August 18, of cerebral hemorrhage and arteriosclerosis.

Nicholas Robert Galambos, Winnipeg, Man., Canada; Magyar Királyi Erzsébet Tudományegyetem Orvostudományi, Pecs, Hungary, 1924; aged 43; died, August 4.

Dennis Edward Ryan, Minneapolis; University of Minnesota College of Medicine and Surgery, Minneapolis, 1908; aged 59; died, September 6, of arteriosclerosis.

Provo L. Payne, Drexel, Mo.; Kentucky School of Medicine, Louisville, 1892; aged 76; died, August 19, in the Vineyard Park Hospital, Kansas City, of uremia.

Thomas Raymond Beggs, Cheboygan, Mich.; Vanderbilt University School of Medicine, Nashville, Tenn., 1912; aged 50; died, September 14, of lobar pneumonia.

Emma Whitson Moore, Kokomo, Ind.; Woman's Medical College of Pennsylvania, Philadelphia, 1891; aged 82; died, September 12, of carcinoma of the breast.

Carl Smith, Philadelphia; Temple University School of Medicine, Philadelphia, 1906; medical inspector for the city board of health; aged 68; died, July 30.

George A. Smith, Toronto, Ont., Canada; Western University Faculty of Medicine, London, 1913; served during the World War; aged 59; died, August 2.

George F. Lewis, Brazil, Ind.; Medical College of Indiana, Indianapolis, 1898; at one time county coroner; aged 81; died; September 7, at Winchester of senility.

Henry L. Stem, Union City, Pa.; Cleveland Medical College, 1892; member of the Medical Society of the State of Pennsylvania; aged 72; died, July 17.

James Matthew Cary, Marvyn, Ala.; Hospital College of Medicine, Louisville, Ky., 1906; aged 62; died, September 24, of cirrhosis of the liver and nephritis.

Rose Hammond Rice, Council Bluffs, Iowa; University of Nebraska College of Medicine, Omaha, 1903; aged 74; died, August 22, of coronary thrombosis.

David Alfred Angus, Rosalia, Wash.; Rush Medical College, Chicago, 1896; aged 73; died, August 2, of bronchopneumonia and chronic myocarditis.

Elmer Charles Wurst ✠ Defiance, Ohio; St. Louis University School of Medicine, 1932; aged 33; died, September 3, of subacute bacterial endocarditis.

Maurice J. Rubel ✠ Chicago; Johns Hopkins University School of Medicine, Baltimore, 1901; aged 66; died, September 17, of carcinoma of the liver.

Joseph Aloysius Turner, Philadelphia; Medico-Chirurgical College of Philadelphia, 1908; aged 57; died, July 19, of nephritis and arteriosclerosis.

Robert D. Lindley, Dallas, Texas; University of Louisville (Ky.) Medical Department, 1894; aged 67; died, August 30, of hypertensive myocarditis.

Walter Robert Taylor Sharpe, Romeo, Mich.; Detroit College of Medicine, 1895; served during the World War; aged 69; died, August 31.

John C. Berry ✠ Chicago; Chicago Medical College, 1890; aged 73; died, September 21, at the Englewood Hospital of mesenteric thrombosis.

Guido Milani, San Francisco; Regia Università degli Studi di Roma. Facoltà di Medicina e Chirurgia, Italy, 1914; aged 53; died, August 29.

William Frederic Nutt, Chicago; Chicago Physio-Medical College, 1898; aged 87; died in September of hemorrhage of the urinary bladder.

Dick Frank Houston, McKinney, Texas; Vanderbilt University School of Medicine, Nashville, Tenn., 1899; aged 74; died, September 3.

Bolivar B. McCutchan ✠ Clifton Forge, Va.; University College of Medicine, Richmond, 1895; aged 70; died, September 8.

Charles Getz ✠ Baltimore; University of Maryland School of Medicine, Baltimore, 1879; aged 85; died, September 6, of pneumonia.

Herbert Huntington Banks, Barrington Passage, N. S., Canada; Harvard Medical School, Boston, 1889; aged 75; died, August 5.

Bureau of Investigation

"ERUS-ERUC"—SURE CURE IN REVERSE

Vicious Tuberculosis "Treatment" Promoted by Hurlbert

The Bureau of Investigation of the American Medical Association received its first inquiry concerning "Erus-Eruc" and E. C. Hurlbert on Feb. 8, 1937. In August 1937 the California Board of Medical Examiners started its investigation of this product, which was promoted by Edward C. and Olive E. Hurlbert and their associates under the trade style "Erus-Eruc Tuberculosis Foundation."

The treatment apparently consisted of a mixture said to be based on kerosene and containing sassafras, to be used as a spray for the nose and throat three times daily, and also as a rubbing medicine. The cost to the credulous purchaser was $35 a month; the claim was frequently made that most patients were cured in a period of four months. Evidence was developed which indicated that during 1939 and 1940 the Hurlberts collected in excess of $30,000 from this activity.

The California board obtained death certificates of persons who had died while under the Hurlbert treatment, as well as records of numerous persons whose conditions had become much worse while taking the treatment. Prominent in their investigation were 2 patients 1 of whom was induced to leave a

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E. C. HURLBERT, MANAGER
OLIVE E. HURLBERT
ASSISTANT MANAGER

OLIVER M. HICKEY
ATTORNEY AND SECRETARY
DALE E. HURLBERT, TREASURER

ERUS-ERUC TUBERCULAR FOUNDATION

418 PERSHING SQUARE BUILDING
LOS ANGELES, CALIFORNIA

MAIN OFFICE:
VANDIKE 6754

GLENDALE OFFICES:
DOUGLAS 8519
KENWOOD 0743

The "Foundation's" card.

tuberculosis sanatorium and institute this treatment. He was subsequently readmitted to the sanatorium in a dying condition. The other patient's father and mother who were on relief were using money given them for food in order that their son's treatment with Erus-Eruc might not be discontinued. The son is now dead.

On the card herewith reproduced no claim is made to the possession of any degree whatever by either Hurlbert or his wife. Connected with the organization was one Ross C. Martin, M.D.

It has been intimated that, because of the procedures in California, these people or their agents have moved production of this fake remedy to the state of Arizona. It is understood that the Food and Drug Administration is now interested in the case by virtue of the fact that it would appear that shipments of the drug are being made into San Bernardino County, where one C. E. Grier, who has been active throughout the investigation of the case in California, is chairman of the Board of Supervisors.

As much as the California board regrets this latest activity, there is nothing further that it can do except merely to call attention to the fact that any action taken against this procedure is in the hands of the district attorney. Both the Board of Medical Examiners and the Board of Pharmacy have done all that they are legally empowered to do to squelch this vicious promotion in the state of California.

There follows herewith a brief history of the proceedings of the investigation, abstracted from reports submitted to the American Medical Association:

The case was filed in the Municipal Court of Los Angeles in the form of a joint complaint entitled "*The People* vs. *Edward C. Hurlbert and Olive E. Hurlbert.*" The complaint contained three charges: violations of Section 2141 (practicing medicine without a license) and Section 4030 (practicing pharmacy without a license) of the Business and Professions Code, and petty theft. The arraignment was on Feb. 27, 1939. The defendants entered a plea of not guilty and asked for a jury trial, which was set for March 24. On that date the deputy city attorney entered a motion of dismissal for the purpose of filing an amended complaint. This was granted and the amended complaint filed containing the same charges except that petty theft was revised to attempted petty theft. Trial was set for April 25.

On April 20 the defendants requested permission to plead guilty to Section 2141, on consideration that the other counts of the complaint be dismissed. They also begged for continuance while entering the plea, and this was granted until May 4, with the stipulation that if, at that time, they did not enter a plea of guilty the judge would find them in contempt of court.

The hearing was finally set for June 1, after the defendants had pleaded guilty as designated. Every effort was made to present evidence on which a denial of probation could be obtained. Such evidence included thirteen death certificates of defendants' victims, some twenty-odd contracts ranging from $100 to $150 which had been obtained from the victims, reports of chemical analyses showing the product to be falsely and fraudulently claimed a cure for tuberculosis or any other human ailment and voluminous evidence of bad faith of the defendants for a period of at least two years prior to the action then before the court.

The court sentenced the defendants to one hundred and eighty days in jail, which was suspended for the period of probation, granted for two years. The terms of the probation were that the defendants should not diagnose the disease of any patient, prescribe their treatment or any other remedy, personally administer their treatment, have any direct personal contact with any patient or have any agreement for splitting fees with any physician and should refrain from advertising their treatment as a sure cure for tuberculosis.

The California board, however, continued its investigation, and approximately six months later evidence was obtained of the violation of the probation on the part of Edward C. Hurlbert. This evidence was sufficient to cause the judge to issue a bench warrant for Hurlbert's arrest. On Jan. 15, 1940, a hearing was held and the Court stated that, in his opinion, the People had established a prima facie case. The defendant was then allowed to take the stand and attempted to testify in his own behalf. At the conclusion, the Court made, in substance, the following statement, according to the report from the California board:

"At the point at which this Court decided that the People had established a prima facie case of violation of probation on the part of the defendant, it was anticipated that a commitment for the previously specified period of one hundred and eighty days in the city jail would be ordered. While listening to defendant's testimony the Court has decided upon an alternative in the form of modification of the original terms of probation which will be offered to you with the understanding that you may accept it as an alternative to the six months' commitment." (At this point the Court observed Mrs. Olive E. Hurlbert in the court room, and called her forward to join her husband before the Bench.)

"It is the order of this Court that Edward C. Hurlbert and Olive E. Hurlbert, each, for the remainder of the period of probation, refrain from any connection with Erus-Eruc, or any other treatment for tuberculosis, or any treatment of any kind, shape or form, of any human ailment. It is to be understood that this order includes not only those terms previously set forth in the probation order, or the language of the complaint originally filed in this action, but also that the defendants shall be precluded from manufacture or sale or distribution or agency or any other association in any manner of form with anything which could be considered a treatment of the sick and afflicted. It is further to be understood that this order apply not only to all members of their family, but also to all persons with whom they may be associated, either directly or in any representative capacity.

"Mr. and Mrs. Hurlbert thereupon, in open court and with the advice of counsel, accepted the alternative as proposed by the Judge.

"The final terms of probation as provided in Judge Landreth's order of modification of probation are as follows:

"In the case of People versus Edward C. Hurlbert and Olive Hurlbert, the terms of probation are modified in substance as follows: That Edward C. Hurlbert and Olive Hurlbert together and separately cease the manufacture, sale and distribution or advertising of the product known as Erus-Eruc or any other remedy purporting to cure or relieve tuberculosis or any disease of any kind; that this modification shall apply to these defendants acting directly or indirectly as individuals, as partners, as agents, as directors or stockholders of any corporation or in any capacity whatsoever or through any members of their family; it being the intention of this order of modification that the defendants separate themselves entirely from any connection with Erus-Eruc or any other remedy purporting to cure any disease or ailment or disfiguration or injury and the period of probation extended to June 1941."

Of special interest to the medical profession are the two items which follow; these were received from the California State Board of Medical Examiners:

"1. Perley B. Exelby, M.D., charged with aiding and abetting Edward C. Hurlbert and Olive E. Hurlbert in the practice of medicine. Complaint for revocation of license filed May 29, 1939. October 17, 1939, found guilty. October 18, 1939, license revoked. October 21, 1940, revocation set aside. Respondent placed on probation five years.

"2. William R. Owens, M.D., charged with aiding and abetting Edward C. Hurlbert and Olive E. Hurlbert. Complaint for revocation of license filed May 29, 1939. October 17, 1939, Board's case presented. Matter continued. February 28, 1940, guilty, and placed on probation five years. June 7, 1940, died."

There does not seem to be any information available concerning the present activities of the Hurlberts. There have been some intimations that the promotion of Erus-Eruc continues somewhere beyond the borders of the state of California. Presumably, if this drug is now being shipped interstate, as intimated, the Food and Drug Administration will continue to be interested in it.

STIPULATIONS

Agreements Between Federal Trade Commission and Promoters of Various Products

The following items are abstracts of stipulations in which promoters of "patent medicines," cosmetics or medical devices have agreed with the Federal Trade Commission to discontinue certain misrepresentations in their advertising. These stipulations differ from the "Cease and Desist Orders" of the Commission in that such orders definitely direct the discontinuance of misrepresentations. The abstracts that follow are presented primarily to illustrate the effects of the provisions of the Wheeler-Lea Amendment to the Federal Trade Commission Act on the promotion of such products.

Acquin.—This product has been represented as competent in treating headaches, simple neuralgia, colds and sore throat. In March 1940 the Federal Trade Commission prevailed on the Acquin Pharmacal Company, St. Louis, also trading as Acquin Products Company, to discontinue such representations and to cease offering the product as being efficacious for any purpose other than as a temporary relief of minor pains or the mild discomforts incident to them. Back in September 1936 the Acquin concern had promised the Commission that it would cease representing that Acquin would prevent pneumonia, influenza, catarrh, mastoiditis, meningitis, tuberculosis, or other "dread diseases"; that it was a remedy for all sorts of aches and pains, colds and sore throats; that it would soothe the nerves or act as an antiseptic, was "safe" and contained a "miracle ingredient." The company further agreed not to publish any statements which, by use of the first person or other terminology, would create the impression that such statements portrayed the experience of any individual, unless this was a fact.

Beutalure Hair Tonic or Beutalure Hair Lotion.—This product, variously designated by the two names given, is put out by Beutalure, Inc., Wilmington, Del., which advertised that it would bring hair back to its original shade, that it contained no dye, would relieve dandruff, check excessive falling hair, reveal the natural hidden beauty of the hair or prove to be a competent treatment for dull, gray or streaked hair. In August 1940 the Federal Trade Commission prevailed on the concern to discontinue these misrepresentations (except that it might advertise the product for dandruff by making the claim that it was only for the temporary removal of the condition). The company also agreed to cease describing its product as a tonic and to eliminate the word "tonic" from the trade name of its product.

Cleo-Pax.—This is a so-called wrinkle plaster put out by Jay P. Walk, Chicago, trading under the firm name Cleo-Pax. In May 1940 Walk stipulated with the Federal Trade Commission that he would cease using any statement directly asserting or implying that the use of the products will check or prevent the formation of wrinkles, lift up sagging facial lines or cause lines or wrinkles which result from age to fade away or become shallower. He also agreed to desist from advertising that use of these products will rejuvenate aged or aging skin or eradicate facial lines or wrinkles.

Dated Cream.—In May 1940 Theresa H. Boyer and Ann Bray, Evansville, Ind., trading as Dated Cream Company, promised the Federal Trade Commission to cease representing that their cream has healing properties or penetrates the skin; that it will go down deep into the pores and cleanse them of all foreign matter or will stimulate the pores to normal action, or activate the sebaceous glands or do more than cleanse the surface. They also agreed to discontinue the misrepresentations that their product will vitalize the skin or remove wrinkles, prevent or restore sagging muscles or restore a substance natural to the skin.

La Palm Rapid Hair Grow.—This is put out by one Maurice J. Allen, trading as M. J. Allen Co., Des Moines, Iowa, who in July 1940 signed a stipulation with the Federal Trade Commission that he would cease representing by means of the trade name "La Palm Rapid Hair Grow" or in any other manner that his product will grow hair or cause hair to grow more rapidly; will aid in the more rapid growth of hair or will give new life to the hair.

LaRue's Master Scalp Treatment.—This is put out by a William S. LaRue, trading as LaRue Laboratories, Omaha. In July 1940 LaRue stipulated with the Federal Trade Commission that in the advertising of his "treatment" he would discontinue certain misrepresentations. Among these were that dandruff is caused by germs; that bad nerves are the paramount cause of all gray hair; that use of the product will retard either gray or falling hair or will stimulate hair growth or help bring back its natural oil and give it brilliant luster.

Purcell Products.—These consist of drugs and cosmetics. In April 1940 Purcell and Company, Inc., Chicago, signed a stipulation with the Federal Trade Commission promising to discontinue the use of the term "Vitamin 'F' " to designate one of its products when in fact no so-called Vitamin 'F' is included among the vitamins currently recognized by authorities on vitamin nomenclature.

Neural-Aid and Myacin.—In the sale of "Neural-Aid," Biovegetin Products, Inc., of Chicago, also trading as V. M. Products, signed a stipulation with the Federal Trade Commission in March 1940 agreeing to discontinue certain advertising misrepresentations. Among these were that Neural-Aid is a nerve food or a competent treatment or effective remedy for nervousness, neuralgia, nerve fatigue, constipation, nervous insomnia, constant worry, muscular aches or pains or disturbances of the nervous system or for neuritis unless the last-named representation is limited to the preparation's aid in the treatment of peripheral neuritis, alcoholic neuritis, neuritis due to anemia or neuritis of either pregnancy or pellagra. In a second stipulation, signed around the same date, Biovegetin Products, Inc., promised to stop advertising that another of its products, "Myacin" kills or ends pain, or otherwise implying that it will afford more than temporary relief from pain associated with rheumatism, arthritis, neuritis, sciatica, gout or lumbago; that it contains no harmful or habit-forming drugs, affords safe relief, and that its formula originated in Europe or is used by thousands of American doctors and hospitals. The stipulation revealed that the company's preparation contains an ingredient which has a tendency to be harmful and habit forming.

Reliance Double Quinine Hair Grower and Reliance Hair Dressing Pomade.—These are put out by George W. Lundgren, one of the co-partners trading as Reliance Drug Company and Relco Drug Company, Inc., New York, present owner of Reliance Drug Company. In July 1940 these interests promised to cease representing that the products mentioned will, when applied externally, cause or promote the growth of hair; will stop falling hair, or will remove dandruff in the sense that it will not reappear.

Richfal Abdominal Support.—In July 1940 the United States Truss Company, Cincinnati, which puts out this "Support," promised the Federal Trade Commission that it would cease using any statement or representation which directly asserts or implies that the use of its device will have the effect of causing one to "reduce without exercise," will enable the user to "keep thin without dieting" or will otherwise result in the loss of excess fat.

Riteway Corn and Callous Remover.—This is put out by an Edna Foster, St. Paul, trading as American Royal Products Company. In May 1940 this person stipulated with the Federal Trade Commission to cease representing that her product is "amazing, new, marvelous, sensational, or different," or is superior to other products. Around the same time Van de Mark Advertising, Inc., Cincinnati, and Claude Efnor, its vice president, promised the Federal Trade Commission to discontinue similar representations.

Roll Away Lotion.—In a stipulation signed in January 1940 Arthur M. Donnelly and E. R. Evans, trading as the Donnelly Company, St. Louis, promised the Federal Trade Commission that they would discontinue certain misrepresentations in the advertising of this product. Among these were that this or any other cosmetic preparation containing substantially the same ingredients or the same properties, whether sold under the name "Roll Away Lotion" or any other designation, is the only new and unique skin lotion on the market, the only preparation which rolls off the skin, and the only cleanser which will not dry the skin. They promised also to cease representing that their product is efficient as a general healing preparation; that it smooths out horny, scratchy or wrinkled skin in every instance, possesses penetrating qualities, is more effective than other lotions in softening and smoothing rough, cutaneous surfaces, whitens the skin or possesses bleaching properties.

Sylphide (or Cleo) Tea.—This is put out by a Los Angeles concern, the Medical Tea Company of California. In August 1940 this company promised the Federal Trade Commission to cease representing that the product consists of various herbs, is safe to use for weight-reducing purposes, except when such use is moderate or employed over short periods of time, or that it is a competent and effective remedy or treatment for obesity, except to the extent that it may reduce weight by increased elimination. The concern also stipulated that it would cease representing that some of the ingredients of "Sylphide Tea" possess certain therapeutic properties which they do not in fact possess.

Wyd-E-Wake Silicon Tea and Vitamin B Food Cons.—These are put out by a Janet Warfel, trading as Nutritional Service, Chicago, who in July 1940 entered into a stipulation with the Federal Trade Commission, promising to discontinue certain advertising misrepresentations. Among these were that the tea is a health beverage, an excellent source of calcium, silicon and manganese; that it is an antiseptic or an invigorating agent of the generative system; that it performs many important functions in the body; has any influence on the body's resistance to disease, or possesses qualities conducive to mental peace, contentment or contemplative pleasure. She also promised to cease representing that the human body is deficient in silicon; that mental lethargy or dulness is symptomatic of silicon scarcity; that silicon is helpful in all cases in which eyes, hair or nails are in poor condition, or that pimples or boils are cleared up when silicon lacks have been restored to the body.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

CHICAGO, Feb. 16-17, 1942. Council on Medical Education and Hospitals, Sec., Dr. William D. Cutter, 535 North Dearborn Street, Chicago.

MEDICAL CORPS, UNITED STATES NAVY

Examination. Assistant Surgeon with the permanent rank of Lieutenant (junior grade) and Acting Assistant Surgeon with the probationary rank of Lieutenant (junior grade), Jan. 5-9. Examination will be held at the Naval Hospitals at Chelsea, Mass., Newport, R. I., Brooklyn, Philadelphia, Norfolk, Va., Charleston, S. C., Pensacola, Fla., Corpus Christi, Tex., San Diego and Mare Island, Calif., Puget Sound, Wash., Great Lakes, Ill., Pearl Harbor, T. H., and Naval Medical Center, Washington, D. C. Apply Rear Admiral Ross T. McIntire, M.D., Surgeon General, U. S. Navy, Washington, D. C.

NATIONAL BOARD OF MEDICAL EXAMINERS
EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, October 18, page 1379.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, June 16-18. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ARKANSAS: * *Medical.* Little Rock, Nov. 6-7. Sec., Dr. D. L. Owens, Harrison. *Eclectic.* Little Rock, Nov. 6. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Oral examination* (required when reciprocity application is based on a state certificate or license issued ten or more years before filing application in California), Los Angeles, Dec. 10. Sec., Dr. Charles B. Pinkham, 1020 N St., Sacramento.

CONNECTICUT: * *Medical Examination.* Hartford, Nov. 11-12. *Endorsement.* Hartford, Nov. 25. Sec., Dr. Creighton Barker, 258 Church St., New Haven. *Homeopathic.* Derby, Nov. 11-12. Sec., Dr. Joseph H. Evans, 1488 Chapel St., New Haven.

DELAWARE: Dover, July 14-16. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: * Washington, Nov. 10-11. Sec., Dr. George C. Ruhland, 6150 East Municipal Bldg., Washington.

FLORIDA: * Jacksonville, Nov. 24-25. Sec., Dr. William M. Rowlett, Box 786, Tampa.

HAWAII: Honolulu, Jan. 12-15. Sec., Dr. James A. Morgan, 48 Young Bldg., Honolulu.

INDIANA: Indianapolis, June 16-18. Sec., Board of Registration and Examination, Dr. J. W. Bowers, 301 State House, Indianapolis.

KANSAS: Topeka, Dec. 9-10. Sec., Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 N. 7th St., Kansas City.

KENTUCKY: Louisville, Dec. 8-10. Sec., Dr. A. T. McCormack, 620 S. Third St., Louisville.

MAINE: Portland, Nov. 12-13. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 129 State St., Portland.

MARYLAND: *Medical.* Baltimore, Dec. 9-12. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Homeopathic.* Baltimore, Dec. 9-10. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, Nov. 4-7. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 413-F State House, Boston.

MISSISSIPPI: *Reciprocity.* Jackson, December. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MISSOURI: Kansas City, Oct. 29-31. Sec., State Board of Health, Dr. James Stewart, State Capitol Bldg., Jefferson City.

NEW HAMPSHIRE: Concord, March 12-13. Sec., Dr. T. P. Burroughs, Board of Registration in Medicine, State House, Concord.

NORTH CAROLINA: *Endorsement.* December. Sec., Dr. W. D. James, Hamlet.

NORTH DAKOTA: Grand Forks, Jan. 6-9. Sec., Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.

OKLAHOMA: * *Reciprocity.* Oklahoma City, Dec. 10. Sec., Dr. James D. Osborn, Jr., Frederick.

OREGON: Portland, January. Exec. Sec., Miss Lorienne M. Conlee, 608 Failing Bldg., Portland.

PENNSYLVANIA: Philadelphia, January. Acting Sec., Bureau of Professional Licensing, Mrs. Marguerite G. Steiner, 358 Education Bldg., Harrisburg.

SOUTH CAROLINA: Columbia, Nov. 10-11. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

SOUTH DAKOTA: * Pierre, Jan. 13-14. Dir., Medical Licensure, Dr. J. F. D. Cook, State Board of Health, Pierre.

TEXAS: Austin, Nov. 17-19. Sec., Dr. T. J. Crowe, 918 Texas Bank Bldg., Dallas.

VERMONT: Burlington, Feb. 10-12. Sec., Board of Medical Registration, Dr. F. J. Lawliss, Richford.

VIRGINIA: Richmond, Dec. 9-12. Sec., Dr. J. W. Preston, 30½ Franklin Road, Roanoke.

WEST VIRGINIA: Charleston, Nov. 17-19. Sec., Public Health Council, Dr. C. F. McClintic, State Capitol, Charleston.

WISCONSIN: * Madison, Jan. 13-15. Sec., Dr. H. W. Shutter, 425 E. Wisconsin Ave., Milwaukee.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARIZONA: Tucson, Dec. 16. Sec., Mr. Franklin E. Roach, Science Hall, University of Arizona, Tucson.

COLORADO: Denver, Dec. 10-11. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver.

MICHIGAN: February. Sec., Miss Flora E. Dube, East Lansing.

RHODE ISLAND: Providence, Nov. 19. Chief, Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: Aberdeen, Dec. 5-6. Dr. G. M. Evans, Yankton.

WISCONSIN: Milwaukee, Dec. 6. Sec., Professor Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

Maryland June Report

The Board of Medical Examiners of Maryland reports the written examination for medical licensure held at Baltimore, June 17-20, 1941. The examination covered 9 subjects and included 90 questions. An average of 75 per cent was required to pass. One hundred and forty-four candidates were examined, 138 of whom passed and 6 failed. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
Yale University School of Medicine		(1939)	1
George Washington University School of Medicine		(1939, 2), (1940, 3)	5
Georgetown University School of Medicine		(1939, 2), (1940)	3
Howard University College of Medicine		(1940, 4)	4
Northwestern University Medical School		(1940)	1
Rush Medical College		(1940)	1
University of Chicago, The School of Medicine		(1939)	1
Johns Hopkins University School of Medicine		(1940, 3), (1941, 34)	37
University of Maryland School of Medicine and College of Physicans and Surgeons		(1937), (1940, 3), (1941, 57)	61
Harvard Medical School		(1937), (1938)	2
University of Rochester School of Medicine		(1940), (1941)	2
Duke University School of Medicine		(1938)*	1
Jefferson Medical College of Philadelphia		(1939), (1940), (1941)	3
Temple University School of Medicine		(1941)	1
University of Pennsylvania School of Medicine		(1939), (1940), (1941, 2)	4
University of Toronto Faculty of Medicine		(1925), (1935)*	2
McGill University Faculty of Medicine		(1940)	1
Medizinische Fakultät der Universität Wien		(1922), (1924)	2
University of London Faculty of Medicine		(1936)*	1
Magyar Királyi Erzsébet Tudományegyetem Orvostudományi, Pecs		(1925)	1
Universiteit van Amsterdam Geneeskunde Faculteit		(1911)	1
Universytet Jagielloński Wydział Lekarski, Cracow		(1937)	1
Universität Basel Medizinische Fakultät		(1939)	1
Universität Zürich Medizinische Fakultät		(1937)	1

School	FAILED	Year Grad.
University of Maryland School of Medicine and College of Physicians and Surgeons		(1940)
Albert-Ludwigs-Universität Medizinische Fakultät, Freiburg		(1905)
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin		(1915)
Johann Wolfgang Goethe-Universität Medizinische Fakultät, Frankfurt-am-Main		(1921)
Regia Università degli Studi di Messina. Facoltà di Medicina e Chirurgia		(1934)
Second Leningrad Medical Institute		(1926)

Fourteen physicians were licensed to practice medicine by reciprocity and 8 physicians so licensed by endorsement from January 16 through July 31. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
College of Medical Evangelists		(1920)	Colorado, (1931) California
Stanford University School of Medicine		(1938)	California
University of California Medical School		(1935)	California
Yale University School of Medicine		(1932)	Illinois
George Washington University School of Medicine		(1921)	Dist. Colum., (1933) Ohio, (1936) Pennsylvania
University of Georgia School of Medicine		(1935)	Georgia
University of Louisville School of Medicine		(1939)	Kentucky
Meharry Medical College		(1933), (1939)	Tennessee
Medical College of Virginia		(1936)	Virginia
University of Virginia Department of Medicine		(1938)	Virginia

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists		(1940), (1941)	N. B. M. Ex.
Yale University School of Medicine		(1933)	N. B. M. Ex.
Columbian University Medical Department		(1898)	U. S. Army
New York University College of Medicine		(1936)	N. B. M. Ex.
Duke University School of Medicine		(1938), (1939)	N. B. M. Ex.
University of Pennsylvania School of Medicine		(1933)	N. B. M. Ex.

* License has not been issued.

Connecticut Homeopathic July Report

The Connecticut Homeopathic Medical Examining Board reports the written examination for medical licensure held at Derby, July 8-9, 1941. The examination covered 7 subjects and included 70 questions. An average of 75 per cent was required to pass. Three candidates were examined, all of whom passed. One physician was licensed to practice medicine by reciprocity. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
Hahnemann Medical College and Hospital of Philadelphia		(1939, 2),* (1940)*	3

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Hahnemann Med. College and Hospital of Philadelphia		(1934)	New Jersey

* Licenses have not been issued.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Oklahoma Law Authorizing the Compulsory Sexual Sterilization of Habitual Criminals Constitutional.—The Oklahoma Habitual Criminal Sterilization Act (57 Okla. St. Ann. Sections 171-195) authorizes the attorney general to institute proceedings for the sexual sterilization of any person adjudged to be a habitual criminal, defined, in effect, to mean a person who has been convicted three or more times to final judgment of the commission of crimes amounting to felonies involving moral turpitude and on the basis of the last conviction sentenced to imprisonment in an Oklahoma penal institution. Questions of fact involved in such a proceeding may, on the demand of either party, be tried by jury, and, if the court or jury, as the case may be, finds the defendant to be a habitual criminal and that he or she may be rendered sterile without detriment to his or her general health, the court may, subject to an appeal to the Supreme Court of Oklahoma, order sterilization. Such a proceeding was instituted against the defendant Skinner, who was confined in a state penitentiary and admittedly had been convicted three times of the commission of crimes of the type mentioned in the act. The last conviction, however, was had in 1934, a year before the enactment of the act. A jury found that the defendant was a habitual criminal within the meaning of the act and that his general health would not be impaired by a sterilization operation. Accordingly the trial court ordered the defendant to be made sexually sterile, and the defendant appealed to the Supreme Court of Oklahoma.

Skinner contended that the act under the purported authority of which his sterilization was ordered violated rights guaranteed to him under both the state and the federal constitution in that the act (1) inflicts a cruel and inhuman punishment, (2) constitutes a bill of attainder and (3) is an ex post facto law. The constitutional inhibitions invoked by the defendant, said the Supreme Court, have reference only to the punishment of crime and have no bearing if the act is not a penal law and if sterilization is inflicted not as a punishment but as a eugenic measure. If the act is regarded as a penal act, the act, regardless of the question as to whether or not sterilization constitutes a cruel and unusual punishment, would clearly be unconstitutional as applied to this defendant as an ex post facto law in that the act had been passed subsequent to Skinner's last conviction. The court believed, however, that the act was not purely a penal statute and that the sterilization it provided for was imposed as a eugenic measure, and not as a punishment, to improve the safety and general welfare of the race by preventing from being born persons who would probably become criminals. As the basis for its views the court pointed out that the procedure called for under the act to effect the end of sterilization was the procedure as in civil cases and that the operation called for was not to be ordered as a part of any judgment of conviction or sentence but, in fact, could be imposed on a habitual criminal who had served his sentence and had been released. Skinner argued that the failure of the act to require a hearing on the question as to whether or not a particular defendant would likely beget criminal children indicated that the legislature had no eugenic purpose in mind. But, answered the court, that fact does not negative a eugenic purpose on the part of the legislature; it simply indicates that the legislature was satisfied that criminal tendencies in all such persons are inheritable. Nor do the facts that the act applies to persons of any age and to persons sentenced to life imprisonment and does not provide for the operation at the time a habitual criminal is about to be released from custody show the legislative intent to be penal rather than eugenic. It is just as reasonable to presume that in passing a eugenic law the legislature was mindful that prisoners may escape or be pardoned without affording an opportunity for the operation to be performed and did not think it wise to place an age limit on the persons subject to sterilization.

The defendant next contended that the failure of the act to require as a condition precedent to compulsory sterilization a finding by the court or jury that by the laws of heredity the defendant is the probable potential parent of children with criminal tendencies deprives the defendant of a full hearing in violation of the due process clauses of both the state and the federal constitution. Due process, said the Supreme Court, has a dual significance, as it pertains to procedure and substantive law. As to procedure, it means notice and an opportunity to be heard and to defend in an orderly proceeding before a competent and impartial tribunal. In substantive law, due process may be characterized as a standard of reasonableness, and as such it is a limitation on the exercise of the police power. The objection of the defendant in this connection really goes to the question of due process in relation to substantive law rather than procedure. The question is whether the legislation under consideration is a reasonable exercise of the police power in providing that all habitual criminals shall be sterilized, for, if it is proper to enact such a provision, the procedural aspects are satisfied; that is, notice and a hearing on the issues of whether the particular defendant is such a habitual criminal and whether the operation is detrimental to his health. If such a provision is not proper, then the objection is that it is an unreasonable exercise of the police power and not that the procedure is inadequate. The determination of the reasonableness of the provisions of the act as an exercise of the police power is based on the question of fact as to whether habitual criminals possess an inheritable tendency to crime which will be passed on to their children if they are allowed to procreate. If that is true, then the act bears a real relation to public welfare. If it is not true, the act encroaches on the constitutional rights of individuals without justification. In every case in which a court is called on to decide whether a particular statute is a proper exercise of the police power as against an improper infringement on constitutional rights, the court must, before it can strike down the act, decide that the existing facts do not justify the conclusion of the legislature that the law enacted by it bears a real relation to health, safety or public welfare. It must be assumed that the legislature had before it statistics, scientific works and information from which it found as a fact that habitual criminals are more likely than not to beget children of like criminal tendencies who will probably become a burden on society. Legislative determination must be given great weight by the courts. Every presumption must be indulged in favor of the existence of facts assumed and acted on by the legislature, and courts are not at liberty to strike down the act unless they can see beyond a reasonable doubt that the legislature was clearly in error, was wholly unwarranted and acted arbitrarily in assuming or determining such facts. We all know, said the court, that heredity plays some part in our mental, moral and physical makeup; just what part no one knows exactly. We know that insanity and idiocy are hereditary, and this court has previously sustained a law providing compulsory sterilization for persons so afflicted. Some authorities believe that habitual criminals have an inheritable trait of insanity. In passing the act under consideration, the legislature probably assumed this to be a fact. If such is a fact, the welfare of society dictates that the state shall, in the exercise of its police power, prevent such persons from reproducing their kind. We think no one would doubt that this court should sustain the present law if it required a third finding to the effect that the accused is the potential parent of offspring with inherent criminal tendencies but in the very nature of the case, testimony by expert witnesses on this question would be highly speculative and a finding by a court or jury, based on such testimony, would likewise be speculative. The opinion of the experts would probably be based in part at least on data that

were available and considered by the legislature at the time of enacting the law. If a court or jury can make a finding of fact based on such speculative evidence, we can see no reason why the legislature cannot find or assume facts, based on the same speculative evidence, as a basis for the exercise of the police power. We find nothing in the record that justifies a finding by this court that the legislature was clearly and beyond a reasonable doubt in error in assuming facts justifying the act as a proper exercise of police power. Without such a showing, or unless the legislative determination is plainly contrary to those matters of common knowledge of which the court may properly take judicial notice, we should not declare the act unconstitutional. Our knowledge on the subject, which is not a knowledge of law but of science and observation, is not superior to that of members of the legislature, and we should be extremely careful not to trench on legislative discretion and power. The right to veto or repeal laws is not vested in the courts, and they are not concerned with the wisdom of the law.

Finally, the defendant contended that the act denied him equal protection of the law, in violation of state and federal constitutional provisions. The test, said the Supreme Court, of equal protection of the law is dependent on the reasonableness of the classification. The act here applies to all habitual criminals whether incarcerated in an institution or not. To the court it appeared that the classification was reasonable and that therefore there was no arbitrary or unlawful discrimination. Accordingly the judgment of the lower court ordering the compulsory sterilization of the defendant was affirmed, with four justices dissenting.—*Skinner v. State ex rel. Williamson, 115 P. (2d) 123 (Okla., 1941).*

Chiropractic: Death of Diabetic Patient Following Withdrawal of Insulin.—Following the death of one of his patients, an information was filed against the defendant chiropractor charging him with manslaughter. The criminal court of record, Dade County, granted a motion, submitted by the defendant, to quash the information, and the state appealed to the Supreme Court of Florida.

The information alleged that the patient was suffering from diabetes for which he was taking insulin at the time the defendant commenced to treat him for an injured foot. The defendant, it was alleged, was aware of the patient's diabetic condition yet advised and instructed the patient to discontinue the use of insulin, with the result that the patient died. It was further charged that insulin was an indispensable remedy in the treatment of diabetes and that the patient's death was due to the unskilful acts and procurement, culpable negligence and gross ignorance of the defendant.

In the opinion of the Supreme Court, the information was sufficient against the defendant's attack on it. In so holding, the court referred to a Washington case, *State* v. *Karsunky*, 197 Wash. 87, 84 P. (2d) 390 (J. A. M. A. **113**:1357 [Sept. 30] 1939), in which a drugless practitioner advised against the use of insulin by a diabetic patient and prescribed a new and different diet. The patient died and a prosecution for manslaughter followed. The Supreme Court of Washington, in support of its conclusion that the defendant was proved guilty, observed that the defendant, when he undertook to administer treatment, "was bound to know the nature of the remedies he prescribed and also the treatment—this includes advice respecting use or nonuse of anything—he adopted (discontinuance of use of insulin and unrestricted intake of carbohydrates), and he is responsible criminally for the death resulting to the patient from gross ignorance in the application of the treatment." The Supreme Court of Florida in the present case felt that if a person undertakes to cure those who search for health and who are, because of their plight, more or less susceptible of following the advice of any one who claims the knowledge and means to heal, he cannot escape the consequence of his gross ignorance of accepted and established remedies for the treatment of diseases from which he knows his patients suffer, and if the wrongful acts of such a practitioner, positive or negative, reach the degree of grossness, he must answer to the state. The information in this case, in the opinion of the court, clearly charged that the defendant was in such a position and that the death of the patient was directly traceable to his gross ignorance. The order granting the defendant's motion to quash was therefore reversed. —*State v. Heines, 197 So. 787 (Fla., 1940).*

Naturopathy: Right of Practitioner to Use Facilities of State Board of Health.—In 1939 the Florida State Board of Health promulgated a rule which denied to naturopaths the use of its specimen containers, biological products and laboratory services but made available such services to doctors of medicine, osteopaths and dental surgeons only. The plaintiff, a naturopath, filed a petition for a writ of mandamus in the Supreme Court of Florida to compel the board to rescind the rule.

The plaintiff admitted that the defendants had a right to promulgate proper rules but contended that the one in question worked a discrimination against naturopaths. The defendants argued that, since naturopaths were not required to, and did not, meet the educational qualifications demanded of other practitioners of the healing art, they were therefore not entitled to receive the same services and privileges as were available to such other practitioners. The Supreme Court admitted that naturopathy is a limited form of the healing art and that naturopaths were not authorized to practice materia medica, surgery or chiropractic in Florida. It held, however, that the scope of naturopathy in the use of its authorized agencies is so general as to place it in the category of one of the important schools of the healing arts. The difference between naturopaths and other practitioners, the court said, was in the method of treatment. The services to which the plaintiff claimed to be entitled pertained to aid in prognosis and therapeutic observations. They were not for the purpose of treatment but were mainly for testing and experimentation, although the results might suggest the method of treatment to be used. Many of the great discoveries in the art of healing have been wrought by experiment, the court continued, and it would be clearly discriminatory to open the door of experimentation to one school of the healing art and close it to another—especially since naturopaths were licensed and regulated by the laws of the state just as were doctors of medicine, osteopaths and dental surgeons. Futhermore there was no showing that the plaintiff was lacking in any of the essentials of his art. The defendants' motion to quash the plaintiff's petition was therefore overruled.—*State ex rel. Turner v. Baltzell et al., 197 So. 783 (Fla., 1940).*

Society Proceedings

COMING MEETINGS

American College of Surgeons, Boston, Nov. 3-7. Dr. Frederic A. Besley, 40 East Erie St., Chicago, Secretary.

American Society of Tropical Medicine, St. Louis, Nov. 11-14. Dr. E. Harold Hinman, Wilson Dam, Ala., Secretary.

Associated Anesthetists of the United States and Canada, Boston, Nov. 3-7. Dr. C. J. Wells, 1932 S. Salina St., Syracuse, N. Y., Secretary.

Association of American Medical Colleges, Richmond, Va., Oct. 27-29. Dr. Fred C. Zapffe, 5 South Wabash Ave., Chicago, Secretary.

Association of Military Surgeons of the United States, Louisville, Ky., Oct. 29-Nov. 1. Colonel James M. Phalen, Army Medical Museum, Washington, D. C., Secretary.

Central Society for Clinical Research, Chicago, Nov. 7-8. Dr. Carl V. Moore, Washington University School of Medicine, St. Louis, Secretary.

National Society for the Prevention of Blindness, New York, Dec. 4-6. Mrs. Eleanor Brown Merrill, 1790 Broadway, New York, Executive Director.

Omaha Mid-West Clinical Society, Omaha, Oct. 27-31. Dr. J. D. McCarthy, 1036 Medical Arts Bldg., Omaha, Secretary.

Puerto Rico, Medical Association of, Santurce, Dec. 11-14. Dr. David E. Garcia, P. O. Box 3866, Santurce, Secretary.

Radiological Society of North America, San Francisco, Dec. 1-5. Dr. Donald S. Childs, 607 Medical Arts Bldg., Syracuse, N. Y., Secretary.

Society for the Study of Asthma and Allied Conditions, New York, Dec. 6. Dr. W. C. Spain, 116 East 53d St., New York, Secretary.

Southern Medical Association, St. Louis, Nov. 10-13. Mr. C. P. Loranz, Empire Bldg., Birmingham, Ala., Secretary.

Southern Surgical Association, Pinehurst, N. C., Dec. 9-11. Dr. E. Alton Ochsner, 1430 Tulane Ave., New Orleans, Secretary.

Western Surgical Association, St. Paul, Dec. 5-6. Dr. Arthur R. Metz, 2449 Washington Blvd., Chicago, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1931 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

22:141-286 (Aug.) 1941

*Studies on Congestive Heart Failure: I. Importance of Restriction of Salt as Compared to Water. H. A. Schroeder, New York.—p. 141.

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Changes in Rhythm of Heart During Resection of Pericardium in Chronic Constrictive Pericarditis, as Recorded Electrocardiographically. H. J. Stewart and R. L. Bailey Jr., New York.—p. 169.

Spa Treatment of Thromboangiitis Obliterans. T. J. Fatherree and C. Hurst, Soap Lake, Wash.—p. 180.

Significance of Low Voltage of QRS Complex in Precordial Leads: Comparison with Low Voltage in Limb Leads. S. Bellet and A. Kershbaum, Philadelphia.—p. 195.

Aortic Valvular Lesion Associated with Austin Flint Murmur. B. J. Gouley, Philadelphia.—p. 208.

Paroxysmal Ventricular Tachycardia: Its Favorable Prognosis in Absence of Acute Cardiac Damage and Its Treatment with Parenterally Administered Quinine Dihydrochloride. J. E. F. Riseman and H. Linenthal, Boston.—p. 219.

Quantitative Electrocardiographic Study of Digitalization. A. J. Geiger, L. F. Blaney and W. H. Druckemiller, New Haven, Conn.—p. 230.

Variable Interval Between Electric and Acoustic Phenomena in Auricular Fibrillation. A. Luisada, Waltham, Mass.—p. 245.

Further Observations on Effects of Certain Xanthine Compounds in Cases of Coronary Insufficiency, as Indicated by Response to Induced Anoxemia. N. E. Williams, H. A. Carr, H. G. Bruenn and R. L. Levy, New York.—p. 252.

Congestive Heart Failure.—Schroeder determined the comparative importance of salt and water restriction in the occurrence or prevention of the edema of heart failure in 23 patients. The patients were given weighed diets in which the sodium chloride content, the calory value, the protein content and the intake of fluid were constant for definite periods. The activity to which the patient was accustomed prior to study was not changed. Digitalis was given when auricular fibrillation with a rapid ventricular rate was present or if the patient had been taking it previously. Diuretic drugs were given only when the patient's condition demanded their use. The output of chloride in the urine was measured daily. The restriction of salt to a level below the urinary output resulted in a decrease in edema. Usually a diet containing as little as 1 Gm. of salt in twenty-four hours was sufficient to cause diuresis or forestall further edema, but the salt content of the ordinary "salt-free" diet was not low enough. When the intake of salt was sufficiently restricted, the amount of fluid taken did not usually affect the edema. Occasionally diuresis was increased when the patient was taking plenty of fluids and decreased when fluids were rigidly restricted. When renal insufficiency accompanied heart failure a high intake of fluids caused symptoms of "water intoxication." The studies suggest that chloride restriction is important in controlling edema of congestive heart failure but that fluid restriction is of little value.

American Journal of Clinical Pathology, Baltimore

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The Clinical Pathologist. A. V. St. George, New York.—p. 625.

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American J. Digestive Diseases, Fort Wayne, Ind.

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Influence of Inositol and Other B Complex Factors on Motility of Gastrointestinal Tract. G. J. Martin, M. R. Thompson and J. de Carvajal-Forero, New York.—p. 290.

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Treatment of Idiopathic Ulcerative Colitis with Concentrated Liver Extract and Vitamin B_1. P. Shiffer, Stroudsburg, Pa., and L. K. Ferguson, Philadelphia.—p. 300.

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Effect of Small Intestinal Distention on Bile and Urine Flow: Its Possible Relationship to Hepatorenal Syndrome. J. G. Schnedorf and T. G. Orr, Kansas City, Kan.—p. 303.

Pigmentation of Kidneys by Psyllium and Its Effects on Excretion: Experimental and Clinical Study. C. H. Thienes and E. M. Hall, Los Angeles.—p. 307.

Study of Functions of Stomach Following Pyloric Obstruction and Gastroenterostomy. F. Neuwelt, J. Medoff, J. Patedjl and H. Necheles, with assistance of W. Scruggs, Chicago.—p. 310.

Gastrointestinal Allergy: Review of 134 Cases. J. W. Thomas and C. P. Wofford, Cleveland.—p. 311.

American Journal of Psychiatry, New York

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Hereditary Factor in Mental Deficiency. A. T. Hopwood, C. C. Kirk, Orient, Ohio, and F. L. Keiser, Columbus, Ohio.—p. 22.

Family Care, Community Resource in Rehabilitation of Mental Patients. H. B. Molholm and W. E. Barton, Worcester, Mass.—p. 33.

Community Care of the Mentally Defective. E. J. Humphreys, Thiells, N. Y.—p. 42.

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Syndrome of Internal Frontal Hyperostosis: Report of Eight Cases. N. Roth, New York.—p. 63.

Comparative Effects of Coma Doses of Amorphous Insulin Administered Intravenously and Subcutaneously to Psychotic Patients. I. C. Sherman, J. C. Mergener and A. A. Low, Chicago.—p. 77.

*Effect of Nicotinic Acid in Stupor, Lethargy and Various Other Psychiatric Disorders. V. P. Sydenstricker and H. M. Cleckley, Augusta, Ga.—p. 83.

Psychopathology of Hit-and-Run Driver. L. S. Selling, Detroit.—p. 93.

Psychology of Repeated Accidents in Industry. Alexandra Adler, Boston.—p. 99.

Pneumoencephalography in Epilepsy. W. W. Dickerson, Caro, Mich.—p. 102.

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Observations on Psychiatric Sequelae to Surgical Operations in Women. E. Lindemann, Boston.—p. 132.

Anaphylactic Response During Insulin Shock Therapy of Schizophrenia: Detailed Case Report with Follow-Up Studies. E. N. Hinko, M. M. Fenton and H. Balberor, Eloise, Mich.—p. 140.

Nicotinic Acid for Psychiatric Disorders.—Sydenstricker and Cleckley used nicotinic acid in the treatment of 29 patients with symptoms of severe active psychosis but with no signs of pellagra. The predominating psychotic changes were manic excitement, delusions, hallucinations, disorientation and delirium tremens. Usually the response to nicotinic acid was prompt, often spectacular, whereas other previous treatment was of no benefit. The good response of 6 additional patients with various possible contributing causes would seem to leave little doubt that the real cause of the psychosis was an avitaminosis. The possible contributing causes were peptic ulcer in 1, fracture of the femur in 1, mild pneumonia in 1, use of alcohol to excess in the past in 2 and a mild sciatica in 1. The prompt and striking recovery of 3 patients showing typical psychosis of delirium tremens also leaves little doubt that the psychosis was due primarily to avitaminosis. Seven of the 29 patients experienced improvement only. The nicotinic acid therapy did not furnish a permanent solution for their psychiatric problem; 1 remained psychoneurotic and the others showed persistent intellectual and emotional impairment which apparently was related to cerebral arteriosclerosis, senility or other factors. The chief psychiatric problem of the other 22 patients was solved by the vitamin therapy. The authors' experience leads them to believe that the symptoms of many patients whose psychiatric status suggests toxic psychosis or exhaustion delirium may be relieved

by nicotinic acid therapy. In such patients, and also in those who show unexplained clouding of consciousness, a therapeutic trial of nicotinic acid may be the only means by which to determine whether or not the psychosis is due to avitaminosis.

American Journal of Public Health, New York

31:769-904 (Aug.) 1941

Tuberculosis Control Program for Institutions in New York State Department of Mental Hygiene. R. E. Plunkett and W. J. Tiffany, Albany, N. Y.—p. 769.
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Epidemiology of Poliomyelitis in Detroit in 1939. F. H. Top, Detroit, and H. F. Vaughan, Ann Arbor, Mich.—p. 777.
Distribution of Vectors of Equine Encephalomyelitis in Massachusetts. R. F. Feemster and V. A. Getting, Boston.—p. 791.
Relation of Ammonia-Nitrogen to Breakpoint Chlorination. A. E. Griffin and N. S. Chamberlin, Newark, N. J.—p. 803.
Care of Children with Heart Disease in Crippled Children's Program Under Social Security Act. Betty Huse, Washington, D. C.—p. 809.
Chronically Ill Cardiac Children in Institutions and Foster Homes. T. D. Jones, Boston.—p. 813.
Medical-Social Problems of Rheumatic Children. Ethel Cohen, Boston. —p. 819.
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Comparison of Undechlorinated and Dechlorinated Swimming Pool Waters: Twenty-Four and Forty-Eight Hour Plate Counts of Samples. T. M. Riddick, New York.—p. 829.

Annals of Internal Medicine, Lancaster, Pa.

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Industrial Hygiene in National Defense Program. J. J. Bloomfield, Washington, D. C.—p. 165.
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Mechanisms of Peripheral Circulatory Failure. C. J. Wiggers, Cleveland.—p. 178.
*Pneumonia of Friedländer's Bacillus. L. A. Julianelle, St. Louis.—p. 190.
*Weil's Disease: Report of Three Cases, Including Morbid Anatomy of One Case and Brief Review of Pertinent Literature. J. J. White and J. V. Prevost, Philadelphia.—p. 207.
Therapeutic Studies in Hyperthyroidism. P. Starr and H. Pomerenze, Chicago.—p. 226.
Acute Hepatitis of Alcoholism: Clinical and Laboratory Study. H. B. Cates, Los Angeles.—p. 244.
*Sigmoidoscopic Diagnosis of Periarteritis Nodosa. J. Felsen, New York. —p. 251.
Some Problems Confronting the Physician in Examination of Automobile Drivers. L. S. Selling, Detroit.—p. 265.
Clinical Studies with Aid of Radiophosphorus: III. Absorption and Distribution of Radiophosphorus in Blood of, Its Excretion by and Its Therapeutic Effect on Patients with Polycythemia. L. A. Erf, Berkeley, Calif., and J. H. Lawrence, San Francisco.—p. 276.
*Experiences in Treatment of Subacute Bacterial Endocarditis with Sulfanilamide, Sulfapyridine and Sulfathiazole: Review of Previously Reported Cured Cases with Report of Fifteen Treated Cases Including One Cure and One Aborted Case. H. E. Heyer and F. K. Hick, Chicago.—p. 291.
American Board of Internal Medicine as Factor in Scholarship in American Medicine. E. E. Irons, Chicago.—p. 304.

Pneumonia of Friedländer's Bacillus.—According to Julianelle, study of the literature indicates that Friedländer's bacillus is responsible for a small proportion of the total of pneumonias. In an aggregate of 17,260 cases of pneumonia observed by fourteen different authors and their associates, Friedländer's bacillus was the causative factor in from 0.6 to 13 per cent. An average of the composite statistics, 196 cases, reveals that roughly 1 in each 100 cases was ascribed to Friedländer's bacillus. The same evidence reveals the infection to be highly fatal. The infection usually occurs among individuals of middle and old age. It is extremely rare in infants and children. This predilection is unexplained. Similarities exist between Friedländer's and pneumococcic pneumonia, the essential difference between the two being tissue destruction in the former, leaving permanent testimony of past infection. In Friedländer pneumonia therapeutic reliance should probably be placed on antiserum. Reimann lists Friedländer's pneumonia among the infections in which sulfonamide compounds are of doubtful value.

Weil's Disease.—White and Prevost report 3 proved cases of Weil's disease. The infection in each was definitely associated with rats. In reference to case 2 they demonstrated Leptospira in a living and in a dead rat from the immediate vicinity. In all 3 the disease had an acute onset which caused the patients to go to bed for several days, during which the acute symptoms gradually subsided and jaundice became manifest in from two to seven days after the onset. The patients claimed that the pruritus accompanying jaundice was the most disturbing symptom. A hemorrhagic diathesis appeared in the first patient nine months after he acquired the infection, and this seemed to be directly responsible for his death. These hemorrhages were traced to the gallbladder mucosa, although the entire gastrointestinal tract exhibited petechial hemorrhages. Two patients complained of mild epigastric pain and nausea and 1 of myalgia. The bile pigments in the stools were indirectly proportional to the rise and fall of the icteric index values. Hepatic enlargement occurred in the 2 male patients but was absent in the female. Leptospira was demonstrated in the blood of each patient by darkfield examination. The method described by Friedman for obtaining darkfield preparations of Treponema pallidum from gonorrheal discharges was highly advantageous and satisfactory, especially for obtaining blood serum from dead guinea pigs. Organisms were present in the blood after the ninth day. This is contrary to the findings of Inada and others. Leptospira was seen only in the urine of the second patient and this on the twenty-second day of the disease. The contents aspirated from the gallbladder of the first patient at cholecystogastrostomy for probable obstruction of the common duct contained Leptospira, which was demonstrated by darkfield examination on the sixty-first day of the disease. This is probably the first case in which Leptospira was demonstrated in bile. The gallbladder may act as a focus of infection and the patient may become an asymptomatic carrier. Prothrombin deficiency might play a part in some of the hemorrhagic manifestations of the disease. Liver extract is of great value in the symptomatic therapy.

Sigmoidoscopic Diagnosis of Periarteritis Nodosa.—Felsen describes a case of periarteritis nodosa clinically established by sigmoidoscopy and confirmed at necropsy. Two other cases which provide clinical and pathologic material for a better understanding of the changes observed at sigmoidoscopy are presented. There were many opportunities for sigmoidoscopic studies of the patient, a woman of 45, complaining of asthma following a cold in September 1935. At the first examination there were noted in the rectosigmoid peculiar horizontal, linear, dark red parallel streaks approximately 1.5 cm. in length separated by approximately 1 cm. of healthy mucosa. Examination with a telescopic device and green filter disclosed that between the proximal and distal points the vessel appeared to be bellied out, and the inference was that it represented a thrombosed artery. At two follow-up examinations the lesions were still present, and in addition there was a definite elevation of the mucosa over the affected vessels. Several small focal areas of thrombosis were seen in the affected and unaffected vessels, corresponding anatomically to the end branchings of the sigmoid and superior hemorrhoid branches of the inferior mesenteric and middle hemorrhoid branches of the internal iliac arteries. Clinical symptoms indicated involvement of larger, extramural arteries as the collateral circulation within the intestinal wall was sufficient to maintain an adequate blood supply. Correlated studies of the intestine of other cases of periarteritis nodosa at necropsy revealed lesions almost identical with those seen in this living patient. The patient's course was rapidly downhill. Neurologic examination in December 1936 revealed optic nerve atrophy and left wrist drop with sensory impairment. The diagnosis was psychosis with somatic disease. Moderate cyanosis of the lips and finger nails was present. The neck veins were engorged and there were several small hard nodules on the right side of the forehead. Neurologic study indicated median nerve paralysis. The patient died on Dec. 30, 1936, approximately sixteen months after the onset of illness, from bronchopneumonia and heart failure. Necropsy revealed periarteritis nodosa of the vessels of the kidneys, liver, mesentery, diaphragm, spleen, lungs and heart, diffuse cortical renal scarring, subcapsular atrophy and chronic passive congestion of the liver, subacute suppurative pericarditis, hypertrophy and dilatation of the right auricle and ventricle, myocardial fibrosis, thrombosis of the left auricular appendage, generalized edema, ascites, bilateral hydrothorax, bronchopneumonia of all lobes, hemorrhagic infarct and severe pulmonary edema of the right lower lobe, and congestion.

Treatment of Subacute Bacterial Endocarditis.—Heyer and Hick used sulfanilamide, sulfapyridine or sulfathiazole for the treatment of 15 patients with subacute bacterial endocarditis. In 1 patient a clinical cure was obtained and in another a beginning valvular implantation seemed to have been aborted. In 13 patients the diagnosis was rheumatic heart disease, in 1 coarctation of the aorta and in 1 hypertensive heart disease. The apparently cured patient was observed for two years and nine months and when last heard from she was leading the life of her people (being a Gipsy) and traveled from Chicago to California by auto trailer without ill effects. In the other patient (well for five months) the authors believe that an implantation on the heart valve had occurred and that persistent fever and splenomegaly were due to vegetations containing hemolytic streptococci. The development of a prompt institution of reflux aortic diastolic murmur during the illness (it having been absent previously) is further evidence of acute valvular changes. Chemotherapy after the illness began probably prevented extensive vegetative growths. After sulfanilamide failed to cause a remission, sulfathiazole did so. Two of the remaining 13 patients are alive, with some fever four and eight months, respectively, after the onset of the disease. The total duration of the disease among the 11 patients who died varied from one month to two years; the average was eight and nine-tenths months. Seven of the 11 fatalities were examined post mortem. Typical vegetations, all with bacteria incarcerated beneath a fibrinous covering, were revealed. The spleens of 6 were enlarged, varying in weight from 290 to 610 Gm. They had the pulpy, soft appearance associated with septic states. Numerous infarcts were observed in the spleen, kidneys, lungs and liver. It is the author's belief that treatment with sulfanilamide and related compounds should be begun as soon as the diagnosis is made and continued as long as possible, and, if improvement does not follow one of the sulfonamide compounds, another should be tried. Only a few patients will improve or be cured, but these fortunate patients can be found only by clinical trial. In the others, remissions of varying length will probably occur.

Archives of Dermatology and Syphilology, Chicago

44:321-546 (Sept.) 1941

Pemphigus: Survey of 170 Patients Admitted to Bellevue Hospital from 1911 to 1941. S. Gellis, New York, and F. A. Glass, Baltimore.—p. 321.
Id.: Report of Seventy-Seven Cases. J. J. Eller and L. H. Kest, New York.—p. 337.
Poikiloderma Congenitale: Report of Case in America. Howard Hailey, Hugh Hailey and H. Clemens, Atlanta, Ga.—p. 345.
Acanthosis Nigricans Overlying Metastatic Malignant Growths of Skin. L. Nicholas, Philadelphia.—p. 349.
Bullous Dyskeratosis of Keratosis Follicularis (Darier) Type. M. H. Goodman and I. R. Pels, Baltimore.—p. 359.
*Inoculation Tuberculosis. P. A. O'Leary and M. W. Harrison, Rochester, Minn.—p. 371.
*Lymphogranuloma Venereum: Observations in 187 Cases at Bellevue Hospital. M. J. Costello and J. A. Cohen, New York.—p. 391.
Keratosis Blennorrhagica: Report of Two Cases. W. C. Herold and D. C. Smith, Charlottesville, Va.—p. 398.
Giant Follicular Lymphadenopathy. F. C. Combes and S. M. Bluefarb, New York.—p. 409.
Onychomycosis Due to Aspergillus Flavus. E. S. Bereston, Baltimore, and H. Keil, New York.—p. 420.
Onycholysis in Fur Workers. H. Heimann and Mabel G. Silverberg, New York.—p. 426.
Spectrographic Analysis of Neurodermatitic Lesions: Human Magnesium Deficiency. R. C. MacCardle, M. F. Engman Jr. and M. F. Engman Sr., St. Louis.—p. 429.
*Prevention of Transfusion Syphilis. F. J. Eichenlaub, R. Stolar and A. Wode, Washington, D. C.—p. 441.
Chrysiasis. O. E. L. Schmidt, Cleveland.—p. 446.
Pigment Production by Fungi: I. Nutritive Requirements. G. M. Lewis and Mary E. Hopper, New York.—p. 453.

Inoculation Tuberculosis.—O'Leary and Harrison present 12 cases of inoculation tuberculosis of the skin. Eight of the patients were male and 4 female; all were from 2 to 50 years of age. A possible source of infection could be determined for only 5 of the patients. In 1 patient, a veterinarian, cutaneous inoculation developed after he had been in contact with tuberculous cows. The particular type of organism present was not determined. Most of the patients had been treated for several months by their physicians; the true nature of the lesion of only 1 patient was suspected. Surgical intervention and roentgen irradiation were employed for 3 patients, and 8 were treated with irradiation alone. The results were satisfactory after both types of treatment. Healing was usually complete within a few months. Follow-up letters from 8 patients, from two to twenty years after dismissal, reveal that not one has had a recurrence at the site of the inoculation or in the regional lymph nodes. Cutaneous inoculation tuberculosis represents the cutaneous analogue of the Ghon tubercle in the lung. Infections usually follow some abrasive injury which allows the organisms to enter. The resulting lesion may be a nodule or a chancre-like ulcer, or its appearance may be nonspecific. The primary lesion is accompanied by regional lymphadenopathy often associated with cordlike lymphangitis. Similar lesions may occur among persons who have previously had tuberculosis (pseudoprimary complex); this makes it difficult to prove that the inoculation is primary in adults. Primary cutaneous tuberculosis is to be distinguished from tuberculosis verrucosa cutis, lupus vulgaris and tuberculosis cutis orificialis, when cutaneous tuberculosis may simulate pyogenic ulcer with bubo, syphilitic chancre, epithelioma with metastasis to the lymph nodes, sporotrichosis and subacute tularemia. Inoculation tuberculosis is usually benign, as the infection is not disseminated to other parts of the body.

Venereal Lymphogranuloma.—Costello and Cohen suggest that all patients with genital lesions giving negative reactions for syphilis and chancroid and patients with nonspecific urethritis be tested for venereal lymphogranuloma. Its incidence and serious debilitating late complications could be diminished if the diagnoses of ulcer of the penis, "cause unknown," nonspecific urethritis and herpes progenitalis were made with the thought that any one of them might be the initial lesion of venereal lymphogranuloma. The disease occurs more often than it is generally thought. There were 187 patients treated in the dermatologic wards at Bellevue Hospital from 1935 to 1939. Contrary to the general belief, venereal lymphogranuloma does not consist of inguinal and anorectal types alone. Hellerstrom and Wassén recognized fifty-three primary lesions in 100 cases of the disease and Sézary and Drain thirty-nine initial lesions in 73 cases. Failure to recognize the primary lesion more frequently may be attributed to the fact that it is usually small, inconspicuous and evanescent. An unsuspected urethritis may be the first manifestation, probably following an initial lesion in the urethra. Proctitis, the forerunner of the anorectal stricture, may be an early manifestation of the disease in both sexes. The authors have treated effectively more than 25 patients with large initial doses of sulfanilamide, 80 grains (5.2 Gm.) a day for the first three days and 30 grains (2 Gm.) daily for relatively long periods. Sulfanilamide is indicated in the early stages of the disease, especially before massive suppuration and sinus formation develop. It also cures the early proctitis associated with the infection. Sulfanilamide therapy and Frei antigen appears to be the best treatment. Sulfathiazole has given equally good results. The many and varied other treatments used at the hospital, according to the authors, prove that no single method save sulfanilamide stands out.

Prevention of Transfusion Syphilis.—Believing that checking the donor for syphilis by testing the blood before transfusion is an inadequate method of protecting the recipient, Eichenlaub and his associates used in their experiments 0.01 Gm. of mapharsen in 500 cc. of blood. None of the rabbits receiving such blood or serum became infected. Of 5 inoculated with whole blood and spirochete emulsion without mapharsen, a testicular chancre developed in 1. Of 4 inoculated with serum and spirochete emulsion, testicular chancres developed in 3. Therefore it appears that the quantity of mapharsen recommended will sterilize blood known to contain spirochetes. For clinical practice the authors suggest that 0.01 Gm. of mapharsen be added to the sodium citrate solution when the blood is withdrawn from the donor. This measure may replace the routine checking of donors by Wassermann tests which are not always sufficient protection for the recipient. If the method is not used as a routine it should be used whenever there is not sufficient time to investigate the donor for syphilis or when any doubt exists as to the donor's freedom from syphilis. Of 41 reported cases of transfusion syphilis, examination of the blood for syphilis of 16 donors would not have detected its presence; in 6 the condition was in the incubation period of the chancre, in

9 there were chancres which were not discovered and Wassermann reactions were negative, and 1 donor was under active treatment for syphilis and had a negative Wassermann reaction just before the transfusion, but soon active malignant syphilis developed. In 2 other cases the emergency was too great to take time to perform blood tests.

Archives of Physical Therapy, Chicago

22:449-512 (Aug.) 1941

Diathermy in Treatment of Irritable Colon: Preliminary Report. W. J. Zeiter and R. F. Renshaw, Cleveland.—p. 453.
Modern Physical Therapy in Otolaryngologic Conditions for General Practitioner. W. Morrison, New York.—p. 457.
Gout—Prevalent Arthritic Disease. W. M. Solomon and R. M. Stecher, Cleveland.—p. 462.
Physical Therapeutic Aids in Management of Allergic Conditions. G. W. Owen, Jackson, Miss.—p. 467.
Roentgen Therapy for Inflammatory Conditions of Eyes, Ears, Nose and Throat. U. V. Portmann, Cleveland.—p. 472.
Effect of Infra-Red Irradiation on Cutaneous Temperatures. E. C. Elkins and C. Sheard, Rochester, Minn.—p. 476.
Modifications and Effects of Static Surge and of Static Wire Brush Discharge. W. Travell and Janet Travell, New York.—p. 486.
Ion Transfer (Iontophoresis). T. G. Klumpp and H. A. Carter, Chicago.—p. 490.

Bulletin Johns Hopkins Hospital, Baltimore

69:1-78 (July) 1941

Electromyogram in Myasthenia Gravis. A. M. Harvey, Baltimore, and R. L. Masland, Philadelphia.—p. 1.
Observations on Mode of Action of Sulfanilamide: Antibacteriostatic Action of Methionine. Eleanor A. Bliss and P. H. Long, Baltimore.—p. 14.
Studies on Chronic Toxicity of Sulfaguanidine (Sulfanilylguanidine). W. C. Corwin, New Brunswick, N. J.—p. 39.
Fate of Treponema Pallidum Inoculated Subcutaneously into Immune Rabbits. F. W. Reynolds, Baltimore.—p. 53.
Congenital Absence of Septum Pellucidum: Case Diagnosed Encephalographically and Associated with Congenital Amaurosis. D. L. Reeves, Los Angeles.—p. 61.

69:79-224 (Aug.) 1941

Rate of Progression of Poliomyelitis Virus in Nerves. D. Bodian, Cleveland, and H. A. Howe, Baltimore.—p. 79.
Effect of Spinal Transection on Spread of Poliomyelitis Virus in Nervous System of Rhesus Monkey. H. A. Howe, Baltimore, and D. Bodian, Cleveland.—p. 86.
Refractoriness of Nerve Cells to Poliomyelitis Virus After Interruption of Their Axons. H. A. Howe, Baltimore, and D. Bodian, Cleveland.—p. 92.
Pathology of Early Arrested and Nonparalytic Poliomyelitis. D. Bodian, Cleveland, and H. A. Howe, Baltimore.—p. 135.
Poliomyelitis in Chimpanzee: Clinicopathologic Study. H. A. Howe, Baltimore, and D. Bodian, Cleveland.—p. 149.
*Neuropathologic Evidence on Port of Entry Problem in Human Poliomyelitis. H. A. Howe, Baltimore, and D. Bodian, Cleveland.—p. 183.
*New Treatment for Burns: Preliminary Report. K. L. Pickrell, Baltimore.—p. 217.

Entry of Virus of Poliomyelitis.—Howe and Bodian present data obtained from an analysis of the distribution of the poliomyelitis lesions in 13 human brains, 8 of which included the olfactory bulbs, in an effort to determine the route by which the virus of poliomyelitis enters. The brains were obtained from rapidly fatal cases or from cases in the late stages of poliomyelitis. One of the brains was from a patient whose death was due to acute appendicitis in the acute stage of poliomyelitis. With regard to the olfactory port in the experimental animal, lesions are found in the olfactory bulb and secondary olfactory centers only after intranasal inoculation. It is precisely in these centers that lesions are most rarely found in human cases. This tends to rule out the olfactory route as the usual port of entry for the virus in man. The distribution of lesions in the human brain does not point precisely to the actual port of ingress of the virus, but by analogy with the chimpanzee it appears that the poliomyelitis virus enters by the oral cavity, pharynx or intestinal tract. After entering the central nervous system by way of the spinal or cranial nerves the virus ascends in the brain stem, and the distribution of the lesions is practically identical with that seen in the experimental animal after inoculation by a nonolfactory peripheral port. It seems likely that in all cases of poliomyelitis except possibly in early cases of spontaneous arrest an encephalitis exists whether or not symptoms are present. Despite the severity of this encephalitis, the distribution of the lesions in susceptible centers varies but little. The localization of the initial paralysis probably is not of significance in indicating the entrance of the virus into the central nervous system, except possibly in initial bulbar paralysis. While initial bulbar signs are most suggestive in localizing the port of entry, their absence does not rule out the cranial nerves as routes of virus dissemination. The virus in passing along the cerebrospinal axis, whether brain stem or cord, may by-pass highly susceptible motor centers in one region, only seriously to affect similar centers at more rostral or caudal levels. This sparing of susceptible centers can probably be attributed, as can the process of arrest in general, to constitutional factors inherent in the host. It was not possible for the authors to determine the precise pathway of the virus from the intestine to the central nervous system except in 1 case in which the vagus nerve was strongly suggested. In at least 1 case the nerves supplying the pharynx were the path of entry.

Sulfadiazine Sprays for Burns.—Since January Pickrell has treated 15 patients with burns extensive enough to require hospitalization and 100 burned outpatients by the following method: While the accident room surgeon is scrubbing, the burned areas are sprayed with 3 per cent sulfadiazine in 8 per cent triethanolamine. This treatment allays pain, and a narcotic may not be necessary. The burned areas are not washed but simply sprayed, and scrupulous care and aseptic technic are exercised in the débridement of blebs and loose tissue. A heat cradle is used for the hospitalized patient. The burned areas are sprayed every hour during the first day, every two hours the second day, every three hours the third day and every four hours the fourth day. By this time a thin, translucent eschar has formed and further spraying is not necessary. The progress of the healing can be followed through the eschar, and in second degree burns epithelial regeneration can be observed. Active exercise and partial weight bearing to prevent contractures are encouraged. In about ten days the edges of the eschar begin to loosen and to separate. Compresses of the sulfadiazine-triethanolamine mixture can be applied; sterile liquid petrolatum sprays followed by saline compresses allow the eschar to be removed in large sheets. In third degree burns the eschar is allowed to remain for at least two weeks. Patients with second degree burns not involving more than 20 per cent of the body surface are not hospitalized. Débridement is carried out and they are observed in the accident room for at least two hours, during which time the burned areas are frequently sprayed with the sulfadiazine-triethanolamine solution. Before discharge the lesions are covered with sterile petrolatum gauze or an ointment of 5 per cent sulfadiazine and 8 per cent triethanolamine in a stearin base. No eschar forms unless the burned area is exposed. These patients return in twenty-four or forty-eight hours, when the burns are again sprayed several times and then dressed. This procedure is carried out on return visits until the burned areas are healed. The author believes that the spray does not coagulate or destroy normal tissue. In the opinion of the surgical staff, the burned areas of the 115 patients healed more rapidly than with any form of treatment previously used at the Johns Hopkins Hospital. There were no infections among the outpatients and only two among the 15 extensively burned patients. The two infections occurred while the eschar was being compressed preparatory to removal. The only toxic reaction occurred in a child of 4 with second and third degree burns that involved more than 80 per cent of the body surface. The child entered the accident room in a dying state and died within forty-eight hours.

Delaware State Medical Journal, Wilmington

13:159-180 (Aug.) 1941

Registration Headaches. E. Cameron, Dover.—p. 159.
X-Ray Examination of Selectees. L. D. Phillips, Marshallton.—p. 161.
Tuberculosis Does Not Recognize Appeasement. A. M. Dietrich, Marshallton.—p. 162.
Venereal Disease and the General Practitioner. T. E. Hynson, Dover.—p. 164.
Nomenclature for Diagnosis of Syphilis. N. D. Carter, Dover.—p. 165.
Selectee Examinations. R. D. Herdman, Dover.—p. 168.
Environment Sanitation in Defense Areas. R. C. Beckett, Dover.—p. 168.
Impressions Gained from Examination of Preschool Children. E. F. Smith, Dover.—p. 170.

Endocrinology, Los Angeles

28:851-1020 (June) 1941. **Partial Index**

Normal Excretion of Sex Hormones in Childhood. I. T. Nathanson, Lois E. Towne and J. C. Aub, Boston.—p. 851.

Close Correlation of Androgen and Creatinine Excretion in Normal Children. I. T. Nathanson, R. B. Miller, Lois E. Towne and J. C. Aub, Boston.—p. 866.

Influence of Testosterone Propionate on Somatic Growth in White Rat. H. Shay, J. Gershon-Cohen, K. Paschkis and S. S. Fels, Philadelphia. —p. 877.

Metabolism of Human Sperm. V. Ross, E. G. Miller Jr. and R. Kurzrok, New York.—p. 885.

Early Estrus in Cat Following Increased Illumination. A. B. Dawson, Cambridge, Mass.—p. 907.

Technic for Assay of Estrogen by Evaluation of Human Vaginal Smears and Comparison with Urinary Estrogen Assay on Mouse Uterus. B. B. Rubenstein, Cleveland, and D. R. L. Duncan, Chicago.—p. 911.

Inhibition of Pseudopregnancy Reaction in Rabbits with Estrogenic and Androgenic Hormones. B. Zondek and J. Sklow, Jerusalem, Palestine.—p. 923.

Effect of Pituitary Preparations on Glycogen Stores of Fasted Mice. A. H. Neufeld and J. B. Collip, Montreal, Canada.—p. 926.

Anterior Pituitary Hormones Which Favor Production of Traumatic Uterine Placentomas. H. M. Evans, Miriam E. Simpson, W. R. Lyons and Kaisa Turpeinen, Berkeley, Calif.—p. 933.

Journal Industrial Hygiene & Toxicology, Baltimore

23:277-352 (Sept.) 1941

Observations on Effect of Paint on Kidneys, with Particular Reference to Role of Turpentine. E. M. Chapman, Boston.—p. 277.

*Etiology of Acne, with Special Reference to Acne of Occupational Origin. A. T. Jones, Lancashire, England.—p. 290.

Renal Excretion of Industrial Chemicals: I. Urinary Lead Concentration and Blood Lead Clearance. S. S. Pinto, H. B. Elkins and J. F. Ege Jr., Boston.—p. 313.

Ventilation in Arc Welding with Coated Electrodes. B. D. Tebbens and P. Drinker, Boston.—p. 322.

Toxicity of Methyl, Ethyl and n-Butyl Methacrylate. W. Deichmann, Cincinnati.—p. 343.

Occupational Acne.—Jones describes a form of occupational acne in which the fundamental lesion, the comedo, is present and the condition is strictly comparable with acne vulgaris. Acne in industry has usually been mistakenly described as "chlor acne." Exposure to chlorine or to compounds containing chlorine does not always give rise to the disease. The author studied during the last six years occupational acne occurring in a chemical industry. Of a total of 2,966 workers and staff 359 presented cutaneous disease; 169 of these had acne, 37 cases of which were of occupational origin. The diagnosis of acne was established by the presence of comedos sufficiently obvious to warrant treatment. Occupational acne occurred in workers engaged in a process using molten chloronaphthalenes, in the manufacture of chloronaphthalenes or in experimental processes with chlorinated naphthalenes and chlorinated diphenyl. Exposure to the fumes of heated chlorinated naphthalenes has produced acne. It was never exhibited by workers handling the cold products within the works. The conditions necessary for the production of acne are that the chloronaphthalenes shall be present in a finely divided state, volatilized by heating, in evaporated solution or as dust. Of 150 employees exposed to constituent products, not one contracted acne. Thus acne has not arisen during the manufacture and use of chlorine. In the author's opinion most workers, if exposed for more than two or three weeks to more than slight concentrations of fumes, will become affected. Thus, of 81 workers so exposed 37 were affected. The exposure was more than slight in only 7 of the unaffected workers. The most important etiologic factor of occupational acne is the degree and period of exposure. The factor of age is not so evident as in acne vulgaris. Generally, disease developed more easily and the latent period was shorter, while the mild cases took longer to subside, in younger employees. Cleanliness is a factor of utmost importance. The precise mechanism of the production of acne remains undetermined, and in the case of acne arising from chlorinated naphthalenes it is not known whether the effect is a local one or whether it arises from absorption of the product into the body. The latent period between exposure to the products and the exhibition of acne varied from one month to two years; the average was seven months. The lesions do not appear to be produced by obstruction of the glands. Some physiologic change is evidently produced in them, i. e. hypersecretion. Repeated crops of blackheads, even with adequate treatment, occur after the worker is removed from contact with chloronaphthalenes. In the absence of gross infection in moderate cases this period is about four months. In severe cases with infection, two or more years may elapse before the eruption subsides. The latent period, the effect of cleanliness, the absence of systemic effects and the distribution of the eruption, most generally over the cheeks and behind the ears (the nose is characteristically spared), indicate that its occurrence is due to a local effect on the skin.

Journal of Investigative Dermatology, Baltimore

4:181-258 (June) 1941

Nutritional Dermatoses in Rat: IV. Riboflavin Deficiency. M. Sullivan and Jane Nicholls, Baltimore.—p. 181.

Studies with Paraphenylenediamine in Fur Workers: Reactions to Skin Tests with Dyes in Asthmatics. Mabel G. Silverberg and H. Heimann, New York.—p. 193.

Extraction of Antigen from Molds. W. B. Sharp, Galveston, Texas.—p. 205.

Role of Allergy in Production of Pruritus Ani: Preliminary Report. S. Schapiro and M. M. Albert, Brooklyn.—p. 219.

Studies with Antigens: XI. Significance of Scratch Test Reactions to Purified Extracts of Ragweed Pollens. B. G. Efron and C. H. Boatner, New Orleans.—p. 227.

Role of Bases in Ointments Used for Protection Against Sunlight. E. A. Strakosch, Minneapolis.—p. 233.

Studies in Contact Dermatitis: V. Intrauterine Transmission to Infant of Artificially Induced Contact Type Dermatitis. M. Grolnick, Brooklyn.—p. 239.

Skin Reactions: XI. Lymphatic Escape Following Electrophoresis of Histamine and Epinephrine. H. A. Abramson and Henriette Gettner, New York.—p. 243.

Tick Bites—Dermacentor Variabilis (Say). L. H. Winer and E. A. Strakosch, Minneapolis.—p. 249.

Journal of Lab. and Clinical Medicine, St. Louis

26:1713-1866 (Aug.) 1941

Renal Aspects of Experimental and Clinical Hypertension. A. C. Corcoran and I. H. Page, Indianapolis.—p. 1713.

Capillary Studies in Raynaud's Disease. F. Deutsch, Boston, with assistance of O. Ehrentheil and Octavia Peirson.—p. 1729.

Excretion of Gold Following Administration of Gold Sodium Thiomalate in Rheumatoid Arthritis. E. F. Hartung, Joyce Cotter and Catherine Gannon, New York.—p. 1750.

Studies in Bacteriophage: VI. Effect of Sulfapyridine and Sulfanilamide on Staphylococci and Bacillus Coli and Their Respective Bacteriophages. Helen Zaytzeff-Jern and F. L. Meleney, New York.—p. 1756.

Variation of Organized Sediment Following Pyridium Administration in Urinary Infections: Technic for Study of Organized Sediment Volume. L. D. Braitberg, Chicago.—p. 1768.

Mode of Action of Bran: I. Effect of Bran on Composition of Stools. B. Fantus and W. Frankl, Chicago.—p. 1774.

Journal of Thoracic Surgery, St. Louis

10:603-724 (Aug.) 1941. **Partial Index**

*Empyema and Unexpanded Lung Following Artificial Pneumothorax for Tuberculosis. E. P. Eglee and R. H. Wylie, New York.—p. 603.

Differentiation Between Acute Putrid and Nonputrid Pulmonary Abscess: Its Significance in Relationship to Therapy. A. S. W. Touroff and H. Neuhof, New York.—p. 618.

Incidence of Empyema Following Intrapleural Pneumonolysis. E. W. Custer and A. C. Cohen, Hamburg, Pa.—p. 625.

Chylothorax: Report of Case Arrested by Phrenicotomy. S. J. G. Nowak and P. N. Barton, Boston.—p. 628.

Studies on Etiology of Postoperative Pulmonary Complications. G. E. Lindskog, New Haven, Conn.—p. 635.

Fat Embolism as Postoperative Complication of Extrapleural Thoracoplasty: Report of Two Proved Cases and Five Suspected Cases. B. N. Carter, J. N. Christiansen and J. A. Prior, Cincinnati.—p. 641.

Congenital Atresia of Esophagus with Tracheoesophageal Fistula: Report of Successful Extrapleural Ligation of Fistulous Communication and Cervical Esophagostomy. N. L. Leven, St. Paul.—p. 648.

Precise Localization of Pulmonary Abscess: The "Spot" Method. C. B. Rabin, New York.—p. 662.

When Is Oleothorax Indicated? R. J. Collins and G. F. Skinner, Saint John, N. B.—p. 675.

Thoracoplasty in Tuberculous Diabetic Patient: Clinical Study. G. C. Thosteson and R. M. McKean, Detroit.—p. 682.

Helium in Anesthesia and Therapeutics, Particularly in Thoracic Surgery. E. P. Smart, Murphys, Calif.—p. 709.

Empyema and Unexpanded Lung.—According to Eglee and Wylie, there were admitted to Bellevue Hospital during the last five years 137 patients with tuberculous and mixed tuberculous empyema, representing 0.91 per cent of 15,000 tuberculosis admissions, or 7.8 per cent of 1,750 given initial pneumothorax. To this group were added 30 other patients treated surgically. In 24 empyema was due to spontaneous pneumothorax. In 143 empyema followed artificial pneumothorax, and

of these 72 had tuberculous and 71 mixed tuberculous empyema. The most common mode of onset of tuberculous empyemas was a progression of persistent pleural effusions during artificial pneumothorax. Other special causes were closed pneumonolysis and neglected reexpansion. Of 20 surgically treated patients with tuberculous empyema 9 were cured, 6 died and 5 were unimproved. For 11 of the 20 patients thoracotomy had to be employed in addition to thoracoplasty. There is no adequate follow-up to the completion of treatment for empyema and reexpansion of the lung for the group treated nonsurgically. To supplement this group 98 patients from the outpatient clinic were studied in the termination phase of artificial pneumothorax; the lungs of 19 of these failed to reexpand, the lungs of 72 reexpanded and those of 7 are reexpanding. In the expanded group only 4.2 per cent had had empyema, whereas 42.2 per cent of those whose lungs failed to reexpand had had tuberculous empyema. When tuberculous empyema develops, only those patients should be selected for nonsurgical treatment who have a good collapse of the pulmonary lesion and whose lesion would permit eventual reexpansion. Among the 71 patients with mixed tuberculous empyema the mode of onset in 4 was the development of a mixed tuberculous empyema in the presence of an unexpanded lung, in 20 pyogenic infections developed during the course of treatment for tuberculous empyema and the other causes were internal pneumonolysis, refills of air, definite episodes of spontaneous pneumothorax and in 30 there was no definite cause. Of 14 patients of this group who did not receive surgical treatment 4 died in the hospital, and 2 of the remaining 10 were improved so that the empyema had been rendered sterile. The rest were unimproved at the time of transfer to other institutions and probably died. Of the 57 treated surgically 27 died, 10 were cured, 7 were improved and 13 were unimproved. Of the 27 who died, 6 died directly from the effects of the operative procedure and 18 of sepsis or progressive tuberculosis. The cause of death of 3 patients could not be determined. The author concludes that artificial pneumothorax should be instituted in municipal clinics only when there is an associated hospital, and follow-up should be continuous. Persistent effusion during artificial pneumothorax should be a warning, and subsequent treatment should be carefully considered. Tuberculous empyema during artificial pneumothorax is a serious complication, and the best opportunity for cure rests in collapse of the pleural space and underlying lung by thoracoplasty at this time. Mixed tuberculous empyema without bronchopleural fistula must not be treated surgically unless pyogenic infection and sepsis is controlled within a week by nonsurgical means. Mixed tuberculous empyema with bronchopleural fistula must be treated immediately by surgical drainage followed by thoracoplasty.

Kansas Medical Society Journal, Topeka

42:325-368 (Aug.) 1941

Emergency Abdominal Conditions Among Infants and Children. R. J. Kennedy, Rochester, Minn.—p. 325.
Prolonged Labor. L. A. Calkins, Kansas City.—p. 331.
Recognition and Management of the Functional Diseaser. R. Sohlberg Jr., McPherson.—p. 334.
Management of Menopausal Syndrome with Stilbestrol. L. K. Zimmer, Lawrence.—p. 339.
Iron Deficiency Anemia. E. L. Mills, Wichita.—p. 344.
Dentistry as It Pertains to Medicine. C. J. Wilson, Hays.—p. 348.

Minnesota Medicine, St. Paul

24:613-708 (Aug.) 1941

Review of Forty-Seven Years of Surgery of Biliary Tract. A. Schwyzer, St. Paul.—p. 625.
Tuberculosis in Silicotic Subject. L. U. Gardner, Saranac Lake, N. Y. —p. 633.
Fistulas Between Urinary Tract and Vagina. J. C. Masson and R. B. Wilson, Rochester.—p. 637.
Minnesota Serologic Evaluation Study: Committee Report. H. E. Michelson, Minneapolis.—p. 643.
Treatment of Intracapsular Fractures of Femur with Smith-Petersen Nail: Report of Twenty-Two Consecutive Cases. O. W. Holcomb, St. Paul.—p. 650.
Treatment of Neurologic Changes Complicating Pernicious Anemia. H. W. Woltman and F. J. Heck, Rochester.—p. 653.
Staphylococcus Aureus Meningitis with Recovery. B. Street, St. Cloud. —p. 658.

Southwestern Medicine, El Paso, Texas

25:197-228 (July) 1941

Medical Preparedness. H. D. Corbusier, Plainfield, N. J.—p. 197.
Venomous Nature of Some Arthropods of Arizona. H. L. Stahnke, Mesa, Ariz.—p. 202.
Behavior Problems in Children. M. K. Wylder, Albuquerque, N. M.—p. 204.
Gold Therapy in Chronic Atrophic Arthritis. H. E. Thompson and B. L. Wyatt, Tucson, Ariz.—p. 207.
Dangers of Sulfanilamide. C. G. Salsbury, Ganado, Ariz.—p. 208.

Surgery, St. Louis

10:207-368 (Aug.) 1941

Treatment of War Burns. C. P. G. Wakeley, Hants, England.—p. 207.
Shock in Perforated Peptic Ulcer: Survey Based on Some 335 Cases from the Four Surgical Divisions of Bellevue Hospital from 1929 to 1938. L. Soutter, Boston.—p. 233.
Submucous Lipomas of Stomach. M. J. Rumold, Kansas City, Kan.—p. 242.
Toxicity of Intestinal Content and of Transudate from Obstructed Loop. F. C. Hill and M. E. Stoner, Omaha.—p. 250.
Intussusception in Adult Due to Submucous Lipoma of Ileum. T. W. Botsford and F. C. Newton, Boston.—p. 265.
*Colonic Spasm as Cause of Intestinal Obstruction. R. Colp, New York.—p. 270.
Emergency Laminectomy for Acute Epidural Abscess of Spinal Canal: Report of Four Cases with Recovery in Three. D. H. Echols, New Orleans.—p. 287.
Pyogenic Infections of Spinal Epidural Space: Consideration of Anatomic and Physiologic Pathology. J. Browder and R. Meyers, Brooklyn.—p. 296.
Ruptures of Pectoralis Major Muscle. E. J. Pulaski and B. H. Chandlee, Philadelphia.—p. 309.
Dupuytren's Contracture: Operative Correction by Use of Tunnel Skin Graft. H. L. Skinner, Baltimore.—p. 313.
Further Observations on Etiology of Vasomotor Disturbances Following Peripheral Nerve Section. L. N. Atlas, Cleveland.—p. 318.
Apparatus for Prevention of Postoperative Circulatory Stagnation. H. D. Cogswell and C. A. Thomas, Tucson, Ariz.—p. 323.
Catgut and Collagen. H. Feriz, Amsterdam, The Netherlands.—p. 326.

Colonic Spasm and Intestinal Obstruction.—Colp discusses 5 cases of obstruction of the large intestine in which preoperatively a diagnosis of a malignant condition was made but in which subsequent events warranted the diagnosis of muscular spasm as the cause of obstruction. The more common variety of cases is that in which the muscular contraction appears to be localized to a small area of the colon. No area of the intestine appears immune. In 1 of the author's patients the area just distal to the cecum was spastic. The sexes appear equally susceptible. The ages of the 5 patients were respectively 48, 60, 71, 70 and 81 years. The history is similar to that obtained from any patient suffering from an intestinal obstruction. There is little, if anything, to differentiate it from an ileus due to intrinsic and extrinsic obstructing lesions. The character, intensity, the type of pain, degree of vomiting, obstipation and the extent of the abdominal distention vary according to the site of the lesion and the degree and extent of the muscular spasm. The patient does not appear to be acutely ill. Occasionally the spastic intestine may be palpated as a hard, firm tumor. This is subject to variations, as the mass may entirely disappear at subsequent examinations or it may appear to migrate to other quadrants of the abdomen. Colonic roentgenograms and fluoroscopy may be of some aid in the differential diagnosis; the characteristic findings are not usually those ascribable to a malignant condition. As the diagnosis of a spastic ileus of the large intestine is rarely made, the therapy is usually that accorded any patient suffering from an acute intestinal obstruction. If there is definite roentgen evidence that the small and large intestines are dilated, a decompression with the Miller-Abbott tube may be tried. Successes have been obtained by the use of drugs. Ileostomy, cecostomy and colostomy proximal to the obstruction have often been life saving. However, before any subsequent operation is undertaken to remove a primary constricting lesion postoperative roentgenograms should verify the cause of the obstruction. This simple expedient may save the patient an unnecessary procedure. If either an ileostomy or a cecostomy is to be performed, the tube may be withdrawn when the normal function of the intestines has been established. For some unknown reason the spasmodic episodes do not recur following surgical intervention, and most of the patients who have been followed for years remain well.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2:75-108 (July 19) 1941

Problems of Circulation. R. J. S. McDowall.—p. 75.
Incidence of Dyspepsia in Military Hospital. J. H. Hutchison.—p. 78.
Gastropapillomatosis Due to Vitamin A Deficiency Induced by Heated Fats. S. Beck and P. R. Peacock.—p. 81.
Cardiac Massage for Impending Death Under Anesthesia. H. Bailey. —p. 84.
"Blue Drum" or Idiopathic Hemotympanum in Children. J. H. O'Donnell.—p. 86.

2:109-148 (July 26) 1941

Depressive States in the Soldier: Their Symptoms, Causation and Prognosis. R. F. Tredgold.—p. 109.
Classification of Cases of Albuminuria. A. Lyall.—p. 113.
Hyperthyroidism: Relation of Basal Metabolism to Clinical Signs. A. B. Anderson.—p. 117.
War Difficulties in Diabetic Diets: The Line-Ration Scheme. R. D. Lawrence.—p. 118.
An Abdominal Catastrophe Which Did Not Take Place. G. E. Parker. —p. 119.

2:149-186 (Aug. 2) 1941

*Toxicity of Sulfonamide Drugs to Cells in Vitro. F. Jacoby, P. B. Medawar and E. N. Willmer.—p. 149.
*Origin, Diagnosis and Management of Early Bronchogenic Tuberculosis. G. G. Kayne.—p. 154.
Employment of Air Raid Noises in Psychotherapy. F. L. McLaughlin and W. M. Millar.—p. 158.
Chemotherapy in Acute Middle Ear Disease: "Masked Mastoiditis." C. A. Hutchinson.—p. 159.

Toxicity of Sulfonamide Derivatives to Cells in Vitro.—Jacoby and his collaborators determined the in vitro toxic effect of sulfanilamide, sulfathiazole, sulfapyridine and sulfadiazine on living fibroblasts, macrophages and epithelial cells when the drugs are used locally. The drugs were applied in concentrations ranging from saturation strength downward and for periods between fourteen hours and three days. At equal concentrations, sulfathiazole is the most toxic. However, the effective toxicity under clinical conditions is determined by the relative solubility of the drugs and in decreasing order is sulfanilamide, sulfathiazole, sulfapyridine and sulfadiazine. The growth inhibition and unfavorable morphologic effects produced by the highest concentrations of sulfathiazole are followed by complete recovery after the drug is removed. Cells do not tolerate prolonged subjection to the highest concentration of sulfanilamide, but recovery readily takes place from concentrations of 1:150 downward. The inhibition of sulfapyridine and sulfadiazine in saturated solution at body temperature is not significant. The feeble inhibitory action of the sulfonamide drugs is favorably contrasted with that of proflavine. There is a profound difference between bacteriologically effective concentrations and those toxic to cells. Therefore when a sulfonamide powder is being selected for direct application to wounds its relative specific bactericidal power should outweigh other considerations.

Early Bronchogenic Tuberculosis.—Kayne defines early bronchogenic tuberculosis as the smallest roentgenologically detectable focus with potentialities for liquefaction. The two common mechanisms leading to early bronchogenic tuberculosis are exacerbation of disseminated residual foci and fresh exogenous reinfection with massive doses in people with lowered resistance. Another uncommon origin is a bronchogenic sequela to a progressive chronic dissemination in the lungs. Generally, early bronchogenic tuberculosis is not associated with clinical and laboratory symptoms or signs and can be detected only by roentgen examination of apparently healthy persons, particularly groups exposed to massive infection or to circumstances which lower resistance. The focus of early bronchogenic tuberculosis must be differentiated from a primary pulmonary focus, apical Simon foci, "round foci" of dissemination and the healed residuums of a previously unsuspected bronchogenic tuberculosis. It appears as a group of small foci or as a nonhomogenic shadow. Help in deciding whether the lesion is active or not must often be obtained from serial roentgenograms. They also aid in assessing the prognosis and by finding the causative factor or factors. The mode of origin, massive contact and lowered resistance must be considered, and to some extent treatment will depend on these factors. Institutional treatment is usually essential. When there is no sputum or no tubercle bacilli can be detected in it, strict rest in bed continued until the lesion is quiescent is sufficient unless the lesion begins to progress. If extension is evident at the end of a month of bed rest or if there is no definite evidence of regression at the end of two months, collapse therapy should be instituted without delay.

Irish Journal of Medical Science, Dublin

No. 187 241-272 (July) 1941

Report of Tuberculin Survey Among Children in Dublin Hospitals Made by Irish Paediatric Association. Dorothy Price.—p. 241.
Tuberculosis in Dublin. Tuberculosis Committee.—p. 256.
Active Immunization Against Streptococcus Scarlatinae. R. T. Jackson. —p. 260.

Lancet, London

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Oxford Vaporizer No. 1. H. G. Epstein, R. R. Macintosh and K. Mendelssohn.—p. 62.
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Performances of Oxford Vaporizers with Ether. H. G. Epstein and E. A. Pask.—p. 66.
Trichiniasis: Clinical Manifestations and Diagnosis. P. B. Beeson.— p. 67.
Blood Picture in Trichiniasis. B. L. Della Vida and S. C. Dyke. —p. 69.
Electrical Convulsion Therapy. A. M. Wyllie.—p. 71.
Air Raid Strain in Mental Hospital Admissions. I. Atkin.—p. 72.

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Four Phases of Birth. J. Barcroft.—p. 91.
*Ammonia Gas Poisoning: Forty-Seven Cases in a London Shelter. M. Caplin.—p. 95.
Calcium and Phosphorus Studies in Normal People, Including Old Age. J. D. Robertson.—p. 97.
Ingrowing Toenail. H. C. W. Nuttall.—p. 100.
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2:121-148 (Aug. 2) 1941

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Reduction of Dust-Borne Bacteria by Oiling Floors. J. C. Thomas.— p. 123.
Punch Prostatectomy. W. E. M. Wardill.—p. 127.
Calcium and Phosphorus Studies in Thyrotoxicosis and After Subtotal Thyroidectomy. J. D. Robertson.—p. 129.
Treatment of Superficial Granulating Surface. A. Edmunds.—p. 130.

Ammonia Gas Poisoning.—Caplin discusses the signs, symptoms, therapy and course of 47 hospitalized and follow-up ammonia gas casualties. During an air raid the connecting pipe of an ammonia condenser in a brewery used as a shelter was pierced. The affected patients had mild, moderate or severe involvement of the respiratory tract. The involvement depended on the nearness of the shelterers to the pierced condenser. The symptoms of 9 mildly affected persons consisted of mild signs of catarrh limited to the conjunctivas and the upper respiratory passages, a smarting sensation in the eyes and mouth, pain on swallowing, some tightness of the throat and hoarseness. The conjunctivas were suffused, the eyelids swollen and the lips, mouth and tongue intensely reddened, dry and raw looking. The fauces presented a similar picture with the addition of edema. There was a strong smell of ammonia in the breath. The signs and symptoms of the mildly affected patients were exaggerated in the 27 who were moderately affected. There were also moist sounds in the chest, suggesting extension of the inflammatory process to the bronchi and bronchioles. In contrast to the mild cases cough was prominent and produced tenacious and, sometimes, blood stained sputum. Auscultation revealed a poor entry of air with localized and fairly generalized rhonchi. Eleven severely affected patients exhibited signs and symptoms of pulmonary edema. On admission they were shocked, restless and obviously distressed. There was slight cyanosis, intense dyspnea and a persistent coughing up of frothy sputum. The pulse was rapid and of poor volume. Generalized rales and rhonchi were audible. All patients were put to bed, if shock and restlessness were present electric cradles were provided, and 0.014 or 0.01 Gm. of morphine was given. Oxygen was administered by intranasal catheter to cyanotic patients. When moist sounds in the chest were pronounced, 0.00065 Gm.

of atropine was injected and repeated every two hours. The ammonia was neutralized with a 25 per cent solution of table vinegar given as a mouth wash and gargle, after which liquid petrolatum was swabbed on the roughened mucous membrane. In the moderate and severe cases a cocaine and epinephrine spray was used. The eyes were irrigated with boric acid lotion and a few drops of castor oil were instilled in them. The 9 mildly affected patients were fit for discharge after a few hours of rest in bed. Twenty-four of the second group improved after treatment and were evacuated within thirty hours. Within six hours of admission the other 3 patients became cyanosed and the increasing dyspnea and restlessness resembled pulmonary edema, for which the patients were treated; but their symptoms increased, and they died within thirty-six hours. Signs and symptoms of bronchopneumonia appeared on the second or third day in 9 of the 24 evacuated persons and, despite sulfapyridine treatment, 3 died within two days of the onset of symptoms. The other 15 evacuated patients had a relatively uninterrupted recovery after an average hospitalization of eight days. Four of the 11 severely affected patients gradually became worse and died within two days of admission. The 7 improved slightly under treatment and were transferred within ten hours to a base hospital; 4 of them continued to improve and were discharged after an uneventful hospitalization of nine days, and 3 became steadily worse and died within two days of being transferred. Effectiveness of civilian respirators against gaseous ammonia was demonstrated by the first aid personnel, who suffered no ill effects, and also by the shelterers, who put on their gas masks at the first suspicion of gas.

Revue Belge des Sciences Médicales, Louvain

13:129-176 (April) 1941. **Partial Index**

*Renal Rickets and Infantilism. L. Brull, L. Dumont-Ruyters and J. Firket.—p. 129.

Renal Rickets and Infantilism.—Brull and his associates investigated the mechanism of osteoporosis and the pathogenesis of the disease in 3 cases of renal rickets from the point of view of the effects of the interrelations of the parathyroids and kidneys on phosphorus and bone metabolism. All cases (ages 21, 16 and a young child) presented genu valgum and terminated fatally. In the first case, a classic picture of renal rickets was seen. The roentgen examination showed a generalized process of decalcification. The case was characterized by an increasing hypocalcemia and elevated phosphorus levels in the blood. In the other 2 cases no actual osteoporosis was observed in the roentgenograms. In the first of these 2, left cryptorchism and feminine skin texture were noted. Necropsy showed hypertrophy of the left ventricle and small atrophied kidneys with cysts. The second of these presented slight kyphoscoliosis, high phosphate retention and acidosis. The authors believe that the following factors produce or contribute to osteoporosis: (1) a mineral deficiency in the food and a (2) vitamin D impairment, connected with insufficient food ingestion due to pronounced anorexia, (3) lack of phosphorus and calcium fixation in the bones, arising from overactivity of the parathyroid glands, which in turn is due to phosphate retention, (4) and high acidosis. The relative involvement of each of these factors needs to be established in every case. The view that overactivity of the parathyroid glands reacting to phosphate retention is essentially responsible is not sufficiently demonstrated.

Giornale di Clinica Medica, Parma

22:249-324 (March 20) 1941. **Partial Index**

*Vitamin E in Therapy of Postdiphtheritic Paralysis. U. Butturini.—p. 249.

Vitamin E in Postdiphtheritic Paralysis.—Butturini studied two groups of 11 patients each with postdiphtheritic paralysis, one of which had an adequate amount of serum in course of diphtheria while the other had an insufficient amount. Patients of the first group were placed in three subgroups: those who had serum therapy alone, those who had serum and vitamin E and those given vitamin E alone. Patients of the second group were placed in two subgroups: those treated with serum and those treated with vitamin E. Vitamin E was administered by mouth in daily doses which varied from 9 to 18 mg. for four or five days. Best results were obtained in patients treated with vitamin E. Paralysis of the velum pendulum regressed and disappeared early in the course of the treatment, the muscles regained strength and the cardiovascular function returned to normal. The author believes that diphtheria causes a more or less acute avitaminosis E which is the cause of postdiphtheritic paralysis. This paralysis may be combated by vitamin E therapy. He advises vitamin E therapy for prevention of postdiphtheritic paralysis in the course of diphtheria. The treatment is harmless and well tolerated. The good results from vitamin E have remained unchanged up to the present date, several months after cessation of treatment.

Policlinico, Rome

48:161-200 (May 1) 1941. Med. Sect. **Partial Index**

*Neurologic Complications in Course of Pernicious Anemia. R. Rubegni. —p. 167.

Neurologic Complications of Pernicious Anemia.—Rubegni studied 27 cases of pernicious anemia with complications due to involvement of the spinal cord, the peripheral nerves and the brain. The group consisted of 19 men and 8 women between the ages of 33 and 65. Paresthesia and symptoms of posterior spinal column involvement were predominant in patients with complications of the spinal cord. Loss of sexual function and sphincter disorders were observed in some cases early in the course of the neurologic complications of the benign type. In rare cases disorders of speech and parkinsonoid tremor were observed. The symptoms remained unchanged before administration of liver therapy but improved on its administration. Three patients exhibited peripheral polyneuritis which was associated with paresthesia in the first case, with lesions of the optic nerves and muscular hypotonicity in the second and with mental disorders and dysarthria in the third. Psychosis was the predominant symptom in 6 out of 7 cases with cerebral complications. A patient with cerebral complications, hypertension and paresthesia but without a psychosis had a typical attack of epilepsy during a recurrence after liver therapy. Liver extracts administered in large doses by injection and by mouth caused either disappearance or great improvement in the neurologic signs in all of the cases except those in which there were advanced nervous lesions. The majority of the patients were able to resume work, with, however, persistence of one or more neurologic symptoms and with a loss of one or more reflexes, when the latter had disappeared before the administration of the treatment. Symptoms of spinal cord involvement may vary from those which simulate a pure spastic spinal paralysis to those which simulate tabes. The peripheral types manifest themselves as various forms of polyneuritis, except when a given nerve and its branches or the posterior spinal columns are predominantly involved. In the cerebral form mental disorders predominate and epilepsy may develop in the absence of mental disturbances. Liver therapy is of value, especially when administered early, in large doses and for long periods.

Revista de Gastro-Enterologia de São Paulo

3:75-114 (Aug.) 1940. **Partial Index**

*Blocking of Sympathetic Nervous Supply in Therapy of Noma. S. P. Ponomarev; translation by J. Jesuino Maciel.—p. 103.

Therapy of Noma.—According to Ponomarev, noma is a typical form of nervous dystrophy due to a disturbance of the balance between the sympathetic and the parasympathetic nervous supply. The author obtained good results from blocking the sympathetic nervous supply by injecting from 50 to 80 cc. of a 0.25 per cent solution of procaine with epinephrine into the lumbar segment of the left and right sympathetic trunk alternately. From three to four injections are administered at intervals of from three to five days. Shortly after administration of the first injection the patient's general condition improves and spread of the ulcer is arrested. As the treatment progresses the necrotic tissues slough away, and healing progresses to a complete cure by the end of the treatment. It is advisable to maintain the patient under control up to the point where complete healing takes place. Noma, if not entirely controlled,

may recur, the recurrence being worse than the original attack. The author reports five cases in children between 3 and 8 years of age. There was a recurrence a month and a half after the first attack in a child who was taken away from the hospital without waiting for completion of healing. The treatment was successfully repeated. In three cases permanent results were obtained from the first series of three or four injections. The child in whom the treatment failed came to the hospital in a very grave condition.

Medizinische Klinik, Berlin

37:453-476 (May 2) 1941. **Partial Index**

Fractures Due to Muscular Traction and Indirect Strain. W. Wagner.—p. 453.
*Clinical Aspects of Typhus. G. Holler.—p. 459.
Pathologic Anatomy of Typhus. E. Randerath.—p. 462.

37:477-500 (May 9) 1941. **Partial Index**

Nutrition of Patients with Gastric Disorders During the War. F. W. Lapp.—p. 477.
*Azosulfamide Treatment of Erysipelas. H. Scharowsky.—p. 483.
*Clinical Aspects of Typhus. G. Holler.—p. 484.

Symptoms of Typhus.—According to Holler, typhus attacks all ages but its severity and mortality increase with the age of the patient. In persons over 50 the mortality reaches from 60 to 70 per cent. It runs a somewhat milder course during the summer than during the winter and is also more frequent during the winter. The present consensus favors transmission by the excreta of lice rather than by the bite, because Rickettsia prowazeki is absent in the suction apparatus and the salivary glands of lice whereas the excreta are highly infectious. Louse infestation is the first factor to be investigated if typhus is suspected, since the body louse is the only source of infection for human subjects. The most important symptom of typhus is the exanthem which develops between the third and sixth day of the disease. To look for the eruption the patient should be completely uncovered so that the entire body can be inspected. The face is nearly always free from the rash. The skin of the body is covered with rose or bluish spots on a mottled base. In some cases the eruption does not develop (typhus exanthematicus sine exanthemate). Typhus is characterized also by disturbances of the central nervous system. There may be a positive Babinski reflex, nystagmus, increased reflexes, paralytic symptoms, stupor, loss of consciousness, restlessness and signs of meningism. The fever, accompanied by chills, generally rises to a peak in three or four days. It then decreases slightly and remains at a more even level. In severe cases it shows considerable excursions. During the second week, even before the severe symptoms subside, the fever decreases and may disappear. It is an unfavorable sign when during the second week deep remissions alternate with hyperpyretic excursions. Uncomplicated cases of typhus usually run their course in from two to three weeks. A favorable outcome may be expected if no threatening signs develop about the middle of the second week. Since an effective specific treatment is not available, the therapy is concerned chiefly with the support of the vital functions. Cardiac remedies, particularly digitalis, are important. Collapse should be counteracted with camphor, caffeine, strychnine, nikethamide or metrazol. In restless and delirious patients lukewarm baths or spongings are beneficial. High fever may be modified by aminopyrine and quinine. Sulfanilamide preparations have been tried without effect. Sulfapyridine proved helpful in counteracting a complicating pneumonia. Blood transfusions proved helpful in severe cases. In patients weakened by starvation, vitamins and an adequate diet act as adjuvants.

Azosulfamide in Treatment of Erysipelas.—According to Scharowsky, opinions are still divided regarding the efficacy of azosulfamide in the treatment of erysipelas. He reviewed 550 cases of erysipelas, some of which date back to the time when sulfanilamide was not in use. Azosulfamide was given by mouth (2 tablets three times) and by intramuscular injection (10 cc.). The author found that azosulfamide is of value only if patients arrive for treatment at the latest two days after the onset of the disease. Azosulfamide is most effective when the treatment is begun immediately after the onset. If more than three and two-tenths days have elapsed it is no longer of value.

Münchener medizinische Wochenschrift, Munich

88:485-512 (April 25) 1941. **Partial Index**

Treatment of Thorax Wounds in Medical Units at Front. M. Ernst.—p. 485.
*Sulfapyridine in Treatment of Wounds. Pfister.—p. 489.
Significance of Electrocardiograms for Clinical Appraisal of Painful Cardiac Sensations. H. Lachmann.—p. 491.

Sulfapyridine for Wounds.—According to Pfister, sulfapyridine applied locally in powdered form to suppurating wounds and slowly healing ulcerations demonstrated prompt bacteriostatic and curative properties. Doses given in a 25 per cent concentration and totaling as many as 20 Gm. (equivalent to 5 Gm. of the pure drug), as well as single doses in a 1.25 Gm. concentration of the pure drug, failed to show in colorimetric and photometric tests any sulfapyridine or acetylsulfapyridine deposits in the urine. This seems to indicate that no absorption of the drug takes place when it is locally applied as a powder. No damage to the urinary system, blood, liver and nervous system was clinically observed. After elimination of the acetyl element, sulfapyridine levels were found in varying proportions according to the method used and the time interval (five, eight, eighteen, twenty-four, thirty-four hours) observed. The readings fluctuated between 1.2, 1.44, 1.52, 0.9 and 1.84 mg. per hundred cubic centimeters for the colorimetric test and between 0.5, 1.2, 0.45, 0.5 and 0.2 mg. per hundred cubic centimeters for the photometric test, the author favoring the latter. In these tests the urine had been deprived of its natural color before use in order to avoid color simulation, which might have confused the results.

Wiener klinische Wochenschrift, Vienna

54:325-356 (April 18) 1941. **Partial Index**

Cerebral Hemorrhage and Peptic Ulcer. J. von Baló.—p. 326.
*Vitamin B and Pernicious Anemia. W. Beiglböck.—p. 327.
Symptomatology of Spastic Constipation. H. Eppinger.—p. 333.
Atypical Case of Coronary Thrombosis. N. von Jagić.—p. 334.
*Remarks on "Gastritis." H. Kutschera-Aichbergen.—p. 335.
*Dangers of Gold Therapy. F. Nagl.—p. 338.

Vitamin B and Pernicious Anemia.—Of 4 patients with pernicious anemia for whom Beiglböck employed vitamin B, 3 responded to the vitamin alone and 1 responded to vitamin and gastric juice. The reticulocytic crisis appeared slowly in all cases and always was below the maximum. This indicates that the effect of yeast preparations is inferior to that of liver. The reticulocytic crisis and the hemopoietic effect would have been overlooked in all cases if the treatment had not been continued for so long. Apparently yeast exerts its effect much less rapidly than does liver, and cases in which yeast is discontinued after from ten to fourteen days cannot be cited as evidence of failure. Studies on the sternal punctate disclosed that there is no essential difference between the effect of liver and of yeast preparations, except that the latter act much more slowly. It is noteworthy that the soreness of the tongue, funicular myelitis and polyneuritis disappeared earlier; that is, before the blood picture became normal. All patients gained weight. The question as to whether connections exist between the vitamin B complex and pernicious anemia is answered in the affirmative.

Gastritis.—Kutschera-Aichbergen stresses the fact that inflammatory changes of the gastric mucosa alone do not produce clinical signs of illness. The characteristic syndrome of gastritis appears only when a number of functional disturbances concur with the microscopic changes. The gastric mucosa is almost never injured by the ingesta. Gastric lesions develop more often indirectly, by way of the circulation, as for example in nicotine gastritis. In the presence of a hypersensitive nervous system the stomach is the organ in which reaction is most likely and most severe. External nervous stimuli are discharged in the stomach in the form of sensory, motor and secretory disturbances. These stimuli originate either in other diseased organs (intestine, liver or bile passages) or in the central nervous system. Neurologically elicited secretory disturbances may be followed later by organic changes in the gastric mucosa. If the clinical syndrome of gastritis is encountered, the primary cause should be searched for first outside the stomach, before a gastric lesion is thought of. A psychogenic origin is possible even in those cases in which secondary organic changes are already present. In the treatment the extragastric primary

causes should receive more attention than the local changes in the gastric mucosa. The curative action of the so-called stomach protective diet is due less to the sparing effect on the gastric mucosa than on the intestine and liver.

Dangers of Gold Therapy.—Nagl shows that, since its introduction twenty-eight years ago, gold therapy has found many indications. It is used in various tuberculous processes, polyarthritis, cutaneous disorders, asthma, actinomycosis and multiple sclerosis. In view of the dangers involved, caution is necessary in the selection of cases and in the dosage. Complications on the part of the skin, the mucous membranes and the gastrointestinal tract are most frequent, but those of the liver and the kidney are more serious. Repeated urinalyses and functional liver tests are therefore indispensable in the course of prolonged gold therapy. The hemopoietic system needs watching, since cases have been reported in which gold preparations have caused impairment of the bone marrow with subsequent granulocytopenia and hemorrhagic aleukia with fatal outcome after small doses. In connection with the bone marrow impairment, it is noteworthy that gastrointestinal disturbances are the most frequent complications, the close connection between the gastrointestinal and bone marrow function being well known. Since improper absorption often leads to avitaminosis and this in turn influences the bone marrow, and since poisoning with heavy metals is much better tolerated when vitamin B_2 is given, a combination of gold therapy with administration of vitamin B_2 is advisable.

Bulletin of the Naval Medical Association, Tokyo

30:323-396 (June) 1941. **Partial Index**

*Gunshot Wounds of the Abdomen. S. Fukuda and M. Usuda.—p. 347.
*Studies on Wounds: I. Clinical Observations of Hemothorax Due to Gunshot Wounds of the Chest. K. Kakisaka.—p. 357.
*Yoshida's and Brösamlen's Reactions in Apparently Normal Men with Persistent Acceleration of Erythrocyte Sedimentation Rates. S. Ashihara.—p. 370.

Gunshot Wounds of the Abdomen.—Fukuda and Usuda report their observations in 27 cases of gunshot wounds of the abdomen treated on a hospital ship, comprising 5 cases of liver wounds and 23 cases of perforating injuries of the gastrointestinal tract. In 1 case there were injuries of both liver and intestine. Ten cases of gastrointestinal injury terminated fatally, including 1 with combined injuries of liver and intestine, while recovery occurred in all cases of exclusive liver injury. The authors agree with the opinion of A. W. Meyer, who considered one and a half days to be the maximal period allowable from the moment of injury to the time of surgical repair in order to entertain hope for recovery. In cases of gunshot wounds of the liver the most striking clinical symptom is pallor due to intraperitoneal hemorrhage. The authors aspirated as much as 250 cc. of blood from the abdominal cavity of 1 patient and report a beneficial effect from transfusing the blood so obtained after citration and filtration.

Hemothorax Due to Chest Wounds.—Kakisaka made clinical observations in 19 cases of hemothorax following gunshot wounds of the chest with only one fatality. The average time of recovery was one hundred and thirty-one days, and in most cases no complicating pleuritis was noted, although 2 subjects developed empyema. Physical examination of the chest in these cases revealed dulness and succussion sounds quite similar to those associated with pleural effusions. Anemia and leukopenia are usual findings, which over a period of about forty-eight days gradually return to normal levels with progressive absorption of the intrapleural fluids. Pleural pain, dyspnea and hematemesis were relatively common. The majority of these patients showed spontaneous arrest of hemorrhage, although in one instance hemorrhage recurred on the twenty-second day. Measurement of the vital capacity of the lungs offers the best means of prognosticating the course since with recovery there is a gradual increase in the capacity from about 1,000 cc. to the normal values.

Yoshida's and Brösamlen's Reactions in Sedimentation.—Using 10 healthy individuals as controls, Ashihara tested Yoshida's and Brösamlen's reactions in 42 subjects who were also apparently normal in every respect except for persistently accelerated erythrocyte sedimentation rates. Yoshida's leukopenic test consists in determining the degree of leukopenia induced by the injection of tuberculin, the degree of white cell count decrease roughly corresponding with the extent of tuberculous disease. Brösamlen's eosinophilic test determines the fluctuations in the percentage of eosinophilic granulocytes after the injection of tuberculin, a decrease indicating severe tuberculous infection and an increased mild infection, while in healthy subjects no changes occur. The author found that in apparently healthy individuals with constant elevation of erythrocyte sedimentation rates the Yoshida test was positive in 71.5 per cent, and only 30 per cent positive in healthy subjects having normal sedimentation rates, thus indicating a significant variation. The Brösamlen test, on the other hand, showed no significant correlation with the erythrocyte sedimentation rate. From these results the author concludes that a persistently high erythrocyte sedimentation rate in apparently normal individuals may have diagnostic significance in respect to the possibility of tuberculous infection.

Kekkaku, Tokyo

19:237-302 (April) 1941. **Partial Index**

*The Takata Reaction in Pulmonary Tuberculosis. S. Haruhara.—p. 245.

Takata Reaction in Pulmonary Tuberculosis.—Haruhara reports the results of the Takata reactions performed on the blood serum of 50 patients with various forms of pulmonary tuberculosis. The test gave positive results in 60 per cent of the cases, but on comparing the results with the erythrocyte sedimentation rates as simultaneously determined the author failed to discover any correlation between these two tests. He also found that the Takata reaction is more apt to be positive in phthisis pulmonum (chronic proliferative-cirrhotic tuberculosis of the lung with exudative local foci) than in the acute form. In hematogenous cases of pulmonary tuberculosis the Takata reaction is positive in over 98 per cent. In the author's opinion the Takata test offers a reliable method of ascertaining the severity of the general constitutional injury arising from tuberculous infection, thus affording a means of controlling the prognosis of pulmonary processes.

Okayama-Igakkai-Zasshi, Okayama

53:903-1178 (May) 1941. **Partial Index**

*Studies on Serum Lipase and Toxicity of the Pancreas in Experimentally Induced Acute Pancreatic Necrosis. Y. Nakagawa.—p. 1061.

Lipase and Toxicity of Pancreas in Pancreatic Necrosis.—In three lengthy communications, Nakagawa reports his observations on the quantitative changes that occur in serum lipase in dogs following experimental induction of pancreatic necrosis. Of the various types of curves he obtained from lipase determinations (Willstätter, Waldschmidt-Leitz and Memmen method) the author found that a pronounced and sudden increase in serum lipase invariably produced early death of the animal, whereas a moderate and gradual increase was frequently associated with long survival. Chemical analyses of various organs for the lipase content revealed that the lungs contained the least amount of the enzyme, the liver stored it temporarily, the spleen yielded moderate values, and the greatest quantity was found in the kidneys. Some correlation seemed to exist between the degree of pancreatic necrosis and the lipase content of the organs, in that the latter tends to be greatly decreased in cases of severe pancreatic damage, while in mild necrosis tissue lipase usually increases greatly during the first twenty to thirty hours and then gradually decreases until death ensues. It is known that in acute pancreatic necrosis lipase breaks down fat into fatty acids and glycerin, and the fatty acids so produced combine with blood calcium to act as a toxic substance capable of destroying pancreatic tissue. The author estimated the quantity of fatty acids in the pancreas of dogs after their death by a modification of the Bloor-Pelkan-Allen method and found these acids markedly increased in the necrotic portion of the organ and moderately increased in hemorrhagic areas, while in edematous and healthy portions the fatty acids were either decreased or normal. In one instance of acute pancreatic necrosis in man with fatal termination, analysis of the pancreas for fatty acids also showed a significant increase.

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Our Present Concepts of Health and of Disease:

ARE THEY ADEQUATE?

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CHICAGO

Address delivered before the students and faculty of Washington University School of Medicine, St. Louis, Sept. 24, 1941.

It is a privilege, as well as a responsibility, to be with you tonight. I am considerably older than you may think. I remember the day of small things in the case of Washington University Medical School. You have been part of the extraordinary development in medical education and medical research in the United States in the last fifty years. The next fifty years in United States medicine can be equally interesting, equally challenging and equally startling. It certainly has been a privilege to live through this half century of medical progress, when America really has come into its own, not as an absorbing sponge of wisdom gathered in other lands but as actually producing new information in our own home.

I do not know what I could tell you freshmen, and I am not so much worried about that anyway, because whatever foolishness I tell you the faculty will have four years' chance to correct. I remember very well my feelings and apprehensions when I was on the freshman bench. I felt that I couldn't possibly live long enough to learn half of what my professors seemed to know. I didn't think it was possible to master it. Now part of what I am going to tell you tonight might discourage you as freshmen. If that was the feeling of a freshman forty years ago, it should be even more so today, because the addition in medical knowledge in all fields that has accumulated in the last fifty years is tremendous. And there has not been much measurable improvement in the human mind—even in that of the medical freshman.

It may be a little discouraging when I tell you that what we know today in medicine is a mere fragment of what remains to be found out. You will learn gradually that all the minutiae that seem to cover every medical problem and field and stuff to suffocation the cerebrum in the front of the parietal lobes don't need to be all the time on the retina, in the cortex or in consciousness. When you have mastered the fundamentals you can put much of the minutiae down into the hypothalamus. Experience will call these thousand spirits from this vasty deep when you need them if you once mastered them and never forget the fundamentals. I say that without being a pupil of Freud.

Two days ago I listened to a very wise talk by a very wise physician to another group of medical freshmen in another part of the country. Among other things, he said that the medical student should learn early to develop hobbies. Yeah? If you come—and woe to the man or woman who comes in any other way—thoroughly conditioned to the philosophy of labor, then I think that there is just one hobby that is paramount to you and to me, and that is nursing of the habit of using our "noodle" all the time. I never did understand how anybody could identify heaven with leisure, with no difficult work, with the end of the opportunity of learning new things. In that respect it is my considerate judgment that you freshmen—if you endure, if you survive—are entering the most interesting, the most challenging and the hardest of the professions in our times. There is certainly for us, in biology and medicine, as for the Athenians in the days of Paul, something new to be sought and valued every day.

Dean Shaffer forced a subject on me for this talk: our present concepts of health and of disease, are they adequate? Maybe I can focus the point of my discussion a little by referring in brief to two recent events in medicine and nutrition. We have heard in the last eight years from many sources that a third of our population, or roughly 40 million citizens, are underfed in addition to being poorly clothed and poorly housed. Now that has been added to recently,

so that today not 40 million but 95 million Americans either cannot get the right food or have such bad habits that they don't eat enough of the right food. If this is so, we have before us a tremendous problem of malnutrition in our once happy land! I quote here from the statement of Dr. Thomas Parran, chief of the United States Public Health Service, made at the Nutrition Congress for Defense in Washington last spring. I was there. I heard it but I am not quoting from memory: "Studies of family diets by the Department of Agriculture in all income groups of the nation show that one third of our people are getting food inadequate to maintain good health" and "less than one fourth of us are getting a good diet." What are the facts? I have been accused of always asking for evidence, and I am asking for the evidence of my distinguished friend Dr. Thomas Parran. At the same congress the Honorable Paul V. McNutt added much more. Mr. McNutt is the administrator of many of our federal welfare bureaus, including the Public Health Service, dealing with these problems. Mr. McNutt said: "Stamina, intelligence, judgment, will, stability may have their roots in vitamin unbalanced diets, and can be treated through clinically determinable doses of synthetic vitamins." Did you get that?

I think Mr. McNutt meant "vitamin balanced diets," but the statement that disorder in these fields "can be treated through clinically determinable doses of synthetic vitamins" seems clear enough. It pains me to say that this is a mouthful of administrative medicine and political science from a public official trained in the law. And then he supports this with the usual lay testimonials of quackdom. I quote again from Mr. McNutt's speech: "Recently I was told that a Western Trucking Company had actually achieved a reduction of its night accident rate by providing all its drivers with bags of raw carrots at the beginning of each trip." Well, now, don't laugh. These are tragic things, because it is said by government leaders in our field. To me it looks like a sin against science. It may frighten our fellow citizens. It certainly will encourage quackery and put many dollars into the pockets of the vendors of synthetic vitamin pills. That synthetic or natural vitamins will empty our insane asylums and our prisons —for who will argue that crime is an act of intelligence—that I shall accept when I see it. There is probably a little rabbit down that hole, but in the name of sanity and science let us do more digging and less talking till we actually have that rabbit in our hand.

Now we are not told what the truck drivers did with those bags of carrots. Did they hang them around their necks, or did they chew and swallow them? Or was this little item not checked? If they chewed the carrots, somebody who knows should have told Mr. McNutt and the officers of the trucking company that chewing carrots or chewing the rag are aids to keeping awake, no matter what it may do for the rhodopsin of the retina.

It is regrettable that a physician, with the standing and responsibilities of Dr. Thomas Parran should take the absence of knowledge as the basis for the statement that less than 25 per cent of the population of these United States eats adequately or eats right, when we do not even know what is the optimum diet for man through the changing periods of his life. Hazel K. Stiebeling of the U. S. Department of Agriculture, who has had a large responsibility in the conduction and interpretation of our federal nutrition surveys, points out in last year's *Annual Review of Physiology* that one of the crying needs of today is the development of methods through which we may detect the possible if not probable injuries from faulty diets before the well known and now recognizable deficiency diseases are on us. If, as it seems to me, Dr. Parran and Mr. McNutt left the reservation of scientific medicine in one direction, my good friend Dr. Logan Clendenning of this state leaves our reservation at the opposite point of the compass. In the last number of THE JOURNAL, Dr. Clendenning presents in a brief piece of correspondence (which I hope all of you will read, if you have not done so) quite a few statistics from many clinics and from able physicians all over these United States, to the effect that the number of actual cases of vitamin deficiencies are astonishingly small in our land, and he gives the inference from this small number that we have no serious vitamin deficiency problem before us. In my judgment, both Dr. Thomas Parran and Dr. Logan Clendenning sin against the scientific method. We should stick to facts. We should be as modest as the good clinician who in doing a physical examination goes over every organic system with the best tests now available. He goes over the heart, the chest, the intestine, the kidney, and what does he put down on the record? Heart—does he write healthy? No. Heart, negative; kidney, negative; intestine, negative. That meams he has not found recognizable disease. He does not give a positive affidavit that everything is all right. In most of these examinations we do not put the individual organ or the patient as a whole on stress, and we have no measure of how far his factors of safety, his powers of regeneration have been impaired.

I should say that our present conception of disease is fairly adequate. But it is still provisional. It is far more adequate than our con-

ception of health, because our conception of health is essentially the absence of clinically recognizable disease. And we now know that, starting out with the reserves, with large factors of safety, with great capacity for regeneration in many tissues, we may sustain a great deal of damage before recognizable disease appears.

We have now solved the riddle of many of the diseases that baffled us fifty years ago. We haven't controlled all of them but we understand them in part. Among these are pernicious anemia, diabetes, endocrine disorders and the dietary deficiency diseases. Now that that is partly done, there remain the virus diseases, there remains cancer—yes, there remain many troubles, to be sure—but it seems to me that the next big step, the next huge terrain to tackle is that involving better methods for determining initial damage to, and the degree of loss of, our reserves, because that, and that alone, will make periodic physical examination of the so-called healthy people mean something. That, and that alone, will give us an approximate definition of health. This is nothing new, nothing startling. In *Science* a few months back, Dr. W. B. Cannon of Harvard University, who is one of the many ornaments of the last fifty years of American Medicine, presents a paper—which I hope every freshman will read; my colleagues, of course, have read it, and so have the sophomores and the juniors and the seniors—entitled "Problems Confronting Medical Investigators." He outlines what we need, only in different words and with different emphasis. I would not call them problems confronting medical investigators; I would call them problems confronting medicine, problems confronting us all, problems confronting society. I believe, to be sure, that the medical investigators form the spearhead of the advance. And it is going to be somewhat more difficult and costly to do the work of the next fifty years, than some of the things accomplished by the past generation.

In retrospect, some of the things look simpler than what is facing us now, particularly the teaching of medicine, always a privilege, to be sure. To me teaching is a great privilege, but it would not be so challenging except for the fact that some time, somewhere, in St. Louis, Boston, Chicago, San Francisco or Baltimore, there is going to sit on the freshman bench a man or a woman who will do greater things than Pasteur, and Koch, and Harvey, and Minot. But all the work in conquering these new frontiers cannot and will not be done by those few.

I think that our next generation of physicians will probably do better than did we, provided we retain our sanity, our courage and our freedom. For science is the creation of free men, with superior intelligence, great industry, patience and courage through the ages. In our early training let us really get conditioned to the scientific method. Let us never forget that, except for a few superficialities, every patient meeting us is a scientific problem challenging analysis. If, in addition, we keep both feet on the ground all the time, we will never commit any great sin against science, any grave crimes against the tradition of our craft.

What I have said so far may stir some of my colleagues in the science and art of medicine to say "Carlson himself has gone off the reservation." I know perfectly well that the term "subclinical disease," an assumed ailment that no present objective criteria can detect but perceived by the seventh sense of the soothsayer is also the concept and the method, the universal method, of the medical quack. But while the term "subclinical disease" is a misnomer, we in the science and art of healing must begin our work much earlier. We must not wait for the time when the reserves are so depleted and the person is so sick that he comes to us. We must redefine our concept of health. When that is done on a factual basis, the concept of disease will take care of itself.

Digests and Reviews

THE STUDENT AND THE EMERGENCY MEDICAL SERVICE

By John A. Ryle, M.D., Regius Professor of Physic, Cambridge University. Slightly condensed from the Lancet, Aug. 30, 1941.

Two years have now passed since the medical student—and particularly the student in London—faced an abrupt disorganization of his educational program and an enforced rearrangement of his life and habits. Good humored and adaptable for the most part, the earlier days of war found him ready to accept much. He grumbled probably no more and, having fewer responsibilities, possibly less than his teachers and others among the general public who stood, not fearful but puzzled and anxious, on the brink of our new era of world catastrophe. Of one responsibility and one decision he was relieved, for the government decided to regard him as coming within the category of the reserved occupations. Already the voracity of the armed forces for doctors and yet more doctors has seriously depleted the civilian services and seems likely before long to claim every fit medical man directly on completion of his six months' qualified apprenticeship as a house officer.

At the outbreak of war, as a new and additional service working apart from the medical services of the armed forces and yet supplying the greater part of their hospital accommodation in this country as well as the war time needs of the civil population, the Emergency Medical Service came into being and developed simultaneously its association with the medical schools. It seems fitting at the beginning of a new session and of the third year of war to consider what part this service has played in the life of the medical student and what contribution the medical student can continue to make to this vast service, which has established itself and affirmed its indispensability in our national life.

CLINICAL EDUCATION MAINTAINED

In the first place, the Emergency Medical Service operating in the London sectors made it possible for the clinical education of all the medical students of London to be maintained. The parent hospitals were reduced in status and complement to casualty clearing stations in order to prepare for the air raids which fell on the metropolis last autumn; but the sectors, whether in county council hospitals or some of the larger mental or other special institutions taken over for the purpose, supplied base hospitals wherein ward teaching could continue and where, by degrees, lectures and laboratory classes could be resumed. In most sectors now there are, besides the parent hospital in town, one, two or more base hospitals in the country, and between these and the parent school the students in the clinical period are distributed. Students in the preclinical period, who at first, in several instances, enjoyed the hospitality of the provincial medical schools, were later in some cases accommodated in country houses converted for the purpose. These are situated for the most part within reasonable reach of London and the base hospitals. In the parent hospitals, students in their clinical period have had opportunities of seeing acute surgery and medicine and of obtaining the experience of wounds and shock and transfusion technic provided by air raid casualties, while outpatient teaching has continued without interruption. Some of the London County Council hospitals have been generous in affording teaching facilities to neighboring London schools. Here and at the base there have been opportunities, often better than in peace time, of seeing a rich variety of material in institutions carrying a large quota of chronic and old age diseases.

Clinical teaching has, nevertheless, suffered in many ways. There has been a large exodus of members of the teaching staffs to join the military services. There has been separation from libraries and laboratories and, during the tenure of appointments at the base, from the valuable opportunities which the outpatient clinics provide. And there has been the continuing sense of unrest and uncertainty militating against reading and calculated to distract the most studious mind. In other ways, however, clinical education has discovered unanticipated boons. Thus the student in many places has found himself living at close quarters and in a more democratic association with his teachers and in friendly unofficial ways acquiring information and an outlook on the problems of his chosen profession which the formal associations of the peace time teaching round could seldom supply; the value of the whole time teacher has been made apparent in this way. He has found or should have found new chances of self instruction from hours spent on his own in wards replete with cases and physical signs of a varied kind. He has seen other types of hospital organization and had glimpses of both the good and the bad in county or municipal administration. At the base he has been able to enjoy a healthier environment and, for the most part, has not been too much disturbed by the visitations of the raiders. In his London terms he has had both the surgical and the human experience of air raid nights and the satisfaction of feeling that he was here making a definite contribution to the war effort. What some of the hospitals in heavily raided areas, often themselves the victims of high explosive and of fire, would have done without the ready and willing help of students it is hard to imagine. Such tasks may not profit the attainment of the examination goal, but to have combined the duties of clerk and dresser with those of stretcher bearer, roof spotter and extinguisher of incendiary bombs is to have lived and learned and to have found in emergency and risk a new return to make for the privileges of postponed military service.

The teaching of pathology and bacteriology has probably suffered more than the teaching of the clinical subjects. Museums, class rooms and laboratories are not easily transferred to or improvised in a county infirmary or mental institution, and a falling off in examination efficiency in the laboratory sciences is more excusable on this account. By now, however, arrangements should be improving and while present stability persists a steady integration of teaching with a better adaptation to its new environments should prove possible.

In the early days of the war some schools favored the principle of dispersal and scattered their students among many institutions. This experiment has now been accepted as a failure, and the tendency is to concentrate more and more into one at most two country hospitals. The need for a shadow hospital to which an

evacuation can take place in the event of the final disruption of the home hospital by enemy action has also become apparent, and the provincial medical schools, no less than the London schools, would do well to contemplate this need.

TRADITION HAS SURVIVED

We can thus say of the Emergency Medical Service that when all tradition seemed swept away and the cherished individualities of famous schools were wellnigh lost in the process of disbanding, it provided the wherewithal of survival. The student who enters the wards of the Emergency Medical Service hospitals on the outskirts of London in the new session will scarcely be able to visualize the discomforts and shortcomings, the improvisations and sandbagging fatigues of the earlier days. If he can never savor the life and provisions of his school under normal conditions, he has instead a war time tradition to make, maintain and enhance. He owes a debt of gratitude to those who have, between them, prepared the way for him during the past two years. He should make every possible use of the human situation in which he finds himself, for by so doing he will not only be storing impressions which will help him to mold his professional outlook and conduct but will also be making a real contribution to the amelioration of difficult times and conditions. The opportunities for technical study may have deteriorated, but the opportunities for technical study of mankind and for mutual instruction and assistance were probably never better.

Out of new and strange discontents and new sympathies stirred by the pictures and stories of London's sick and wounded exiled from bombed streets and finding a haven in a county council hospital or its hutted annex, it is likely that many students will extract material to set them thinking of the future of our hospital services and our medical schools. When the time for rebuilding comes, what contribution will their generation make to the permanent abolition of those slums, now widely shattered, which once helped to provide so much of the disease that gave instruction to their fathers? Where and on what plan will the new hospitals and schools be built? Will the ghost of Sir Thomas More behold at last his hospitals "in the circuite of the citie, a little without the walles . . . so bigge, so wyde, so ample and so large, that they may seeme . . . little townes"? How far have the dislocations of the war influenced the actual work and competence of the medical student? This is hard to judge, but it would probably be the opinion of most teachers and examiners that academic attainment and practical efficiency have both suffered in some degree. An undue dependence on the instruction of the class and the book, a shortage at times and some places of clinical and pathologic material, the dispersal of teachers and the difficulty of concentrated study under existing conditions have had effects for which strong censure would be unfair. Examiners are doing their best to be considerate and yet feel it incumbent on them to expect a reasonable and proper level of competence.

THE PROSPECTS OF STUDENTS

What are the immediate prospects of the student on qualifying? There is now no shortage of house appointments, and every man and woman must serve as a house officer for six months before seeking duty with the armed and auxiliary forces. Thereafter the choice for the men is between the army, the navy, the air force and the Emergency Medical Service, and of these the army is the most importunate. Heretofore the Emergency Medical Service has been able to retain the services of a proportion of the younger men beyond the house officer period and—since it makes hospital provision on a very large scale for the services as well as for civilians, and its efficiency depends not a little on its junior medical officers—it would seem right that it should continue to take its quota from the medical man power pool. It could be wished that there were possibilities of interchange between the Emergency Medical Service and the army. The fact that so many army doctors spend such a high proportion of their time in relative idleness tends to deter some of the young men from applying at once for commissions, but this state of affairs must be accepted as part of the inevitable wastefulness of war. For the keen medical officer there is always work to do with human interest and of high military and moral value, if only he will adapt himself to new circumstances and accept that his first duty is not now the care of "interesting cases" but the preservation of health, efficiency and morale among the fighting men.

What lies ahead of us in the coming months none can say, but certainly an intensification of effort is immediately necessary in the field of medicine and medical education as in every other field. The beginning of a new session may well be made an occasion in the councils of the schools and in student communities for fresh resolutions and planning. Could the medical student require any finer inspiration to hard and eager work than the example set him by sailors, soldiers and airmen of his own generation and by the uncomplaining civilian sick and air raid victims with whom and for whom in one capacity or another his turn to serve must shortly come?

IN SEARCH OF COLONIAL MEDICINE IN WILLIAMSBURG

An editorial slightly abbreviated from the October 1941 issue of the Virginia Medical Monthly.

The Williamsburg Restoration has been carried out in the grand manner. Virginia is proud of Mr. Rockefeller's gift to the state in restoring and preserving its heritage. No one questions the vastness of the undertaking or its accuracy in the smallest detail. There were three great professions honored and respected by our forefathers of the Williamsburg period: the law, the ministry and medicine. One does not have to go far in Williamsburg today to be convinced of the power and prestige of the law in the eighteenth century. The capitol where the law was made, the courthouse where the law was enforced, the public gaol and stocks where the law-breaker was punished, as well as the home of one of the law's great champions, George Wythe, are all proudly shown the Williamsburg visitor. The church of colonial days is beautifully and adequately revealed in the restored Bruton parish church and its quiet graveyard.

What would the visitor to Williamsburg be shown if he asked to see those things that reflect the medicine of this bygone day? He would, no doubt, be told that the Eastern State Hospital on the outskirts of the city—for the removal of which to more distant parts there has naturally been considerable agitation—is the oldest institution devoted to the care of mental disease in the United States, and that here too the treatment of the colored insane was first provided for. He would be shown the cottage of James Galt, the first keeper of the asylum, which now stands on Duke of Gloucester Street, to which it was removed in 1929.

Some of Williamsburg's leading citizens and landowners were physicians: John Amson, Andrew and Robert Anderson, Philip Barraud, Archibald Blair, Charles and John Brown, James and William Carter, Robert Davidson, John Dixon, James and John Galt, Robert Garrett, the George Gilmers (father and son), Samuel Griffin, Peter Hay, Kenneth Mackenzie, Robert Nicholson, William Pasteur, George Pitt and Robert Waller—to recall a few; but, while their names linger on in the records, for the most part the places where they dwelt know them no more.

The medical man in search of medical items of interest in colonial Williamsburg would be interested to know that the Raleigh Tavern was built by the physician Archibald Blair and that it was later owned by another physician, Dr. George Gilmer. When he is shown the Wren Building at William and Mary College the medical visitor would like to be told that here James McClurg, graduate of Edinburgh, later first mayor of Richmond, first president of the Medical Society of Virginia and a member of the constitutional convention, gave the first formal lectures in medicine ever delivered to students in this state.

The doctor who visits the restored capitol and palace and the grounds of William and Mary College should be told something about their medical history. Williamsburg was one of the most important Revolutionary hospital centers, especially toward the end of the war and during the Yorktown campaign. He might be told about the Vineyard Hospital, which stood on the York Road just outside the city, and that the capitol, the palace and the college housed the sick and wounded of the Continental Army. The Restoration undoubtedly wishes they had not, for, if it had not been for the fact that Revolutionary hospitals were set up in these old buildings, the Restoration's work would have been much simpler than it proved to be. Careless Revolutionary soldiers were responsible for the burning of the palace in 1781 and for the destruction by fire of the College president's house and one of the wings of the college. In the Civil War the court house, the Baptist church, Bruton parish church and many private dwellings were converted into temporary hospitals, and the main building of the college was used for a hospital in 1861 by Confederate troops and in 1862 by Federal troops.

The medical minded visitor, especially if he has seen the Hugh Mercer apothecary shop in Fredericksburg, the Leadbetter Shop in Alexandria or that unique preservation of the apothecary's art at the Medical College of Virginia in Richmond will hope to be shown an apothecary shop in Williamsburg. There were many. There was Andrew Anderson's Sign of the Golden Ball and James Carter's Unicorn's Horn and George Pitt's Sign of the Rhinoceras as well as other shops, which were operated by William Biers, William Carter, Richard Couthard, Robert Davidson, John Galt, the two Gilmers, Peter Hay and William Pasteur.

Dr. Archibald Blair's shop, dating from 1717, has been restored. It is the oldest apothecary shop in the state. Unfortunately the interior has not been restored but has been diverted to other uses. Where once the colorful carboys, brass scales, pounding mortars, bottles large and small, and pungent odors conspired to create an atmosphere that was part of the medicine of its day, a peruker, plying a trade equally quaint to us, makes and repairs the wigs worn by the costumed hostesses, guides and servitors of the Restoration. No doubt the corporation will change all this in time.

It is at this point that medicine in Virginia, conscious of its debt to the Rockefeller restora-

tion, must, like a greedy child to whom much has been given, hold out its hands for more. Our profession is at the crossroads of its destiny, and it must plead for the preservation of every visible sign of its olden days that it may know what it has been in order to know what it should be, that it may learn what to hold fast and what to let go.

CHINESE CONTRIBUTIONS TO MEDICAL SCIENCE

Abstract of an article by Joseph Needham and Gwei-Djen Lu, published in the Cambridge University Medical Society Magazine, Easter Term, 1941.

As the history of science comes more and more to include what happened during the long Chinese civilization, it will be recognized that the Chinese were ahead of the Europeans, often by several centuries, in advances which have revolutionized society. Three of the greatest discoveries were Chinese: the compass, gunpowder and printing. The mariner's compass originated in China before the ninth century A. D. and reached Europe by a slow diffusion lasting several centuries around the south Indian trade routes. Gunpowder appeared during the T'ang dynasty, i. e. about the eighth century A. D., and its use then was restricted to fireworks. Movable block printing originated in 932 A. D., so that Feng-Tao has some five hundred years seniority over Gutenberg.

As regards medical science, the earliest idea of the physician in China was no doubt that of a benevolent wizard, willing to combat for a consideration the devils of disease whose behavior he claimed to understand. As centuries went by, a large body of practical medical art grew up, which, when the first Europeans came to know it, was too much despised. In anatomy the Chinese made little progress because of the tabu restrictions against defacing the body, the image of the venerated ancestors; but in pharmacology many valuable drugs were known. Some of these, ephedrine for example, had no representative at all in Western medicine. Other drugs, such as stramonium, were common to both Chinese and galenic pharmacopeias. The mineral remedies, such as arsenic, which the followers of Paracelsus had difficulty in introducing into Western medicine in the sixteenth century, were used by the Chinese in the thirteenth. So also was the iodine-containing seaweed and the antileprosy chaulmoogra oil. While the Chinese did not know of the cardiac-stimulating properties of the fox-glove, they obtained a digitalis-like drug from the skins of toads. As we now know, both these classes of active principles are members of the steroid group. Most surprising is the fact that a kind of vaccination was practiced as far back as the Sung dynasty in the eleventh century; the contents of smallpox pustules were inoculated into the nasal mucous membrane, an operation called "shui-miao," or planting drops of water.

In one direction Chinese medical practice was extremely advanced: that of nutrition. Knowledge of dietary treatment of various diseases in China can be traced back as early as twelve centuries B. C. The "Record of Rites of the Chou dynasty" (about 1100 B. C.) lists not only the Imperial Physician, the Imperial Surgeon and the Regius Professor of Medicine, but also an Imperial Dietitian. The Ching Kuei Yao Lueh of Chang Chi contains vivid accounts of deficiency diseases in their various stages and describes numerous diets. This knowledge was summarized in the fourteenth century A. D. by Hu Se-Hui, who occupied the post of Imperial Dietitian from 1314 to 1330 A. D. and wrote a book called "The Principles of Correct Diet."

Hu Se-Hui even distinguished between the two forms of beriberi, known today as the wet and the dry. He gave sixty-two different diets which would supply, as we know today, the missing vitamins of the B group. The motto of his book was "Food alone cures many diseases." In face of these facts, it is somewhat piquant that recognition of beriberi as of dietary origin is usually ascribed to Takaki in 1880 A. D., an admiral of the Japanese navy. Ancient dietetic knowledge is so deeply embedded in the people in China that no distinction is made between grocers' and apothecaries' shops. Beriberi was not common in China till modern times. Anciently rice was ground in every family on the day it was used; this preserved a thin fatty layer on the grain and a large portion of the embryo which contained sufficient B_1. More study should be devoted to the contributions which Chinese civilization has made to human knowledge. These have been overlooked, partly because hidden behind a language the difficulty of which is often overestimated and partly because Chinese science was never spectacular. But in the story of the development of world culture they must be raised to their rightful position of honor.

DO YOU KNOW WHAT PHYSICIAN—

1. Identified the first diamond found at the great Kimberley Mines in South Africa?

2. Was the first surgeon in America to excise the hip joint? *(The answers are on page 1484)*

Medical College News

Medical schools, hospitals and individuals will confer a favor by sending to these headquarters original contributions, reviews and news items for consideration for publication in the Student Section.

Students Present Insurance Policy to Alma Mater

The class of 1941 of Georgetown University School of Medicine, Washington, D. C., presented a $10,000 life insurance policy to the school, which on maturity will be known as the David V. McCauley Endowment Fund, in honor of the dean. Premiums on policies taken out on several members will be paid collectively by the seventy-three students who comprise the graduating class. A medal and a symbol of the endowment fund were presented to Father McCauley by the class president, Wallace H. Mathews, at a dinner held at the Shoreham Hotel, May 6.

Texas Society Awards Prizes to Interns

The Tarrant County Medical Society, Fort Worth, Texas, held its annual Interns' Night recently, when winning papers in the annual case report contest for interns in Fort Worth hospitals were presented. Dr. Robert J. Jahn, an intern at Harris Memorial Methodist Hospital, won the first prize of $15 for a paper on "Traumatic Diaphragmatic Hernia" and Dr. Charles W. Braselton Jr., a resident at Cook Memorial Hospital, the second prize of $10 for a paper on "Hemachromatosis." Dr. Claude S. McConnell, also at Harris Memorial Methodist Hospital, received honorable mention for a report on "Congenital Hemolytic Jaundice."

Western Reserve's Hamann Society

The membership of the Hamann Society at Western Reserve University School of Medicine, Cleveland, comprises a group of twenty junior and senior students who during the school year present original papers and discuss diagnostic problems, while certain members of the faculty, who are honorary members of the society, act as referees. During the last year the senior members of the society presented reviews on the chemotherapy of pneumonia, peripheral vascular disease, chronic pancreatitis, influenza virus, cancer research, diagnostic value of the spinal fluid and fluid balance in postoperative therapy. The junior members presented historical sketches of men of Cleveland who have made notable advances in medicine. At the final meeting of the society for the year, the officers elected for the next year were Robert Rogoff '42, president; Arthur F. Young Jr. '42, vice president; Robert J. Fulton '42, treasurer and Perry R. Ayres '42, secretary.

Student Saves Fireman's Life

Henry J. Heimlich, a student at Cornell University Medical College, New York, spent the summer as a counselor at a children's camp near Lee, Mass., and was returning home on a special train with 254 children when the train was derailed at Hatch Pond, the first three cars plunging into the water. According to the New York *Times*, after helping the children to the rear cars, student Heimlich found the fireman of the train struggling in the water with one leg pinned in the wreckage and held his head above water for two hours until the fireman was released. The engineer of the train was killed. For his courageous conduct, Heimlich received a gold watch on September 24 from the Greater New York Safety Council. The award was made by the president of the council, Frank L. Jones, in the faculty room of the college at 1300 York Avenue.

Harvard Undergraduate Assembly

The undergraduates of Harvard Medical School, Boston, have an undergraduate assembly which devoted its second annual meeting to reports of investigative work of certain students. As illustrations of these undergraduate studies, the *Harvard Medical Alumni Bulletin* mentions the following: "Thyroid and Parathyroid Hormone Effects on Calcium and Phosphorus Metabolism" by John W. Kirklin '42 and William R. Christensen '42; "Blood Vascular Bundles of Aquatic Mammals" by Don W. Fawcett '42; "The Effect of Thyrotropic Hormone Alone and Combined with Iodine on Thyroid Tissue Metabolism in Vitro" by Willard P. VanderLaan Jr. '42; "Phenylpyruvic Oligophrenia" by Allan D. Callow '42.

History of Medicine Society at Tulane

The History of Medicine Society of Tulane University concluded its year's program with a banquet May 8. The principal address was given by Dr. Edward William Alton Ochsner, New Orleans, on "Contributions of Chicago Physicians to Medicine." Dr. B. Bernard Weinstein of the department of gynecology at Tulane presented the Rudolph Matas Award for the best student contribution to Morton M. Ziskind '42 for his paper entitled "Harvey Cushing." The I. I. Lemann Award was presented to Walter J. Trautman Jr. '43 for his discussion "Albrecht von Haller." The History of Medicine Society Award was presented to Granville I. Walker Jr. '42 for his paper entitled "Hans Zinsser." Walter J. Trautman Jr. was elected president and Dr. B. Bernard Weinstein, faculty adviser.

The William Osler Medal

The American Association of the History of Medicine has established a medal, to be known as the William Osler Medal, which will be awarded annually to the author of the best student essay submitted to the association. Essays that are the results of original research will be given preference, but essays also will be considered which, without being the result of original research, show an unusual appreciation and understanding of historical problems. The association will award the medal for the first time at its eighteenth annual meeting in Atlantic City, N. J., May 3-5, 1942. It will consider unpublished essays that have been written during the academic year 1940-1941 by men or women who at that time were students in schools of medicine and had not yet obtained their doctor's degree. Essays must be sent before Nov. 1, 1941, to the secretary of the American Association of the History of Medicine, Dr. Henry E. Sigerist, Institute of the History of Medicine, 1900 East Monument Street, Baltimore.

Illness Among California Students Last Year

Dr. William G. Donald, university physician, University of California, Berkeley, in his report to the president of the university on medical service rendered students at the E. V. Cowell Memorial Hospital on the campus said that there were 640 students with influenza hospitalized during the last academic year, 523 for other respiratory infections, 104 for appendicitis and 62 for pneumonia. During the year, the number of surgical operations was 503, as against 590 for the previous year.

Junior Colleges to Survey Health Education

The president of the American Association of Junior Colleges, James C. Miller of Columbia, Mo., has appointed a committee to study the need, the programs, courses, staff and other factors related to better health education in the 625 junior colleges in the country. The following committee was appointed: Miss Indie L. Sinclair of Gulf Park College, Gulfport, Miss.; Clarence D. L. Ropp of Junior College of Connecticut, Bridgeport, Conn.; Miss Elsie Elliott of Bennett Junior College, Millbrook, N. Y.; Walter W. Krueger of Grand Rapids Junior College, Grand Rapids, Mich.; Elden B. Sessions of Carbon Junior College, Price, Utah, and Mrs. Josephine K. Adams of Menlo Junior College, Menlo Park, Calif.

The Freshman Class at Louisiana

The freshman class at Louisiana University School of Medicine, New Orleans, this fall comprises ninety-eight students from ten states of this country and from Argentina, Puerto Rico, Santo Domingo and Germany. The average age of the members of the class is 22 years. Six men in the class are sons of physicians. The eleven girls average 5 feet 4 inches (163 cm.) in height and 125 pounds (56.7 Kg.) in weight. Ten different religions are represented in this class.

Yale Graduates Win Prizes and Scholarships

Yale University School of Medicine, New Haven, Conn., announced June 15 the award of the following prizes and scholarships to members of the graduating class:

The Keese Prize, for the most meritorious thesis, to Marvin Blum, B.S. Yale 1937, Wilkes-Barre, Pa.; honorable mention to Robert F. Dine, B.A. Harvard 1937, Allston, Mass., and Peter A. Duncan, B.S. Bates College 1937, Hyde Park, Mass.

The Campbell Gold Medal, for the highest rank in the examinations of the course, to George James, B.A. Columbia 1937, Ridgefield, Conn.; honorable mention to Herbert W. Diefendorf, B.S. Rensselaer Polytechnic Institute 1937, Glens Falls, N. Y., and Robert W. J. Ollayos, B.S. Yale 1938, Hamden, Conn.

The Parker Prize, for the student who has shown the best qualifications for a successful practitioner, to Herbert W. Diefendorf.

The Ramsay Scholarship, for a student of unquestioned ability and character after completing his first year in the Department of Clinical Medicine, to Allan V. N. Goodyer, B.S. Yale 1939, Stamford, Conn.; honorable mention to Maurice Tulin, B.S. Trinity College 1938, Hartford, Conn.

The Perkins Scholarship, for the best record in scholarship in the basic subject of the medical and biologic sciences, to John R. Brobeck, B.S. Wheaton (Ill.) College 1936, M.S. Northwestern 1937, Ph.D. 1939, Steamboat Springs, Colo.; honorable mention to Joseph P. Kriss, B.S. Pennsylvania State College 1939, State College, Pa.

The Ferris Prize in Anatomy, for a student recommended by the Department of Anatomy for the excellence of his work in dissection, to James T. Wolstenholme, B.S. New York University 1940, Clifton, N. J.; honorable mention to Thomas D. Cook, B.A. Lafayette College 1940, Sioux City, Iowa.

Employment Service at Long Island

The Student Employment Service at Long Island College of Medicine, Brooklyn, has been attempting to place students wishing to give their services for a moderate charge or in exchange for room and board during the school year. The following hospitals have accepted students for such remuneration: St. John's, Bayridge, Peck Memorial and the Jewish Home for Chronic Disease.

Portrait of Dr. Sollmann

A portrait of Dr. Torald Sollmann, dean of Western Reserve University School of Medicine, Cleveland, was presented to the school of medicine at the sixty-ninth annual banquet of the Medical Alumni Association, June 3. Mr. Charles Hopkinson of Boston was the artist. Dr. Thomas P. Shupe, Cleveland, is president of the alumni association. At the ninety-eighth annual commencement of the school of medicine, June 11, the address to the graduating class was delivered by Dr. Louis J. Karnosh, associate clinical professor of nervous diseases. The Hippocratic Oath was read by Dr. Harry Goldblatt, professor of experimental pathology.

Tufts Awards

Ralph M. Myerson '42 received the George F. Keenan award of $25 from the Tufts Medical Alumni Association and also one year's subscription to the *New England Journal of Medicine* for his paper on "Endometriosis," which appeared in the *Tufts Medical Journal* last March. The winner was chosen after the several papers were read and graded by two members of the faculty; the selection of the one considered best was then made by the editorial board of the *New England Journal of Medicine*. Last year the award was presented to Herbert R. Glodt '41 for his paper "The Diabetic as a Surgical Risk."

Women Students Furnish Study Room

The Women's Club of Western Reserve University School of Medicine, Cleveland, has furnished a study room for the students. Funds for this purpose were raised by holding a social function at the medical school, March 28, which was attended by more than four hundred persons and from which the net receipts amounted to $560.

Medical Society Collaborates with Continuation School

The Continuation School of Wayne County, Detroit, which opened September 10 at Wayne University College of Medicine and which will continue its classes through June 3, 1942, is a joint effort to provide a training program for practitioners by the Wayne County Medical Society, the College of Medicine, the Detroit Department of Health and the hospitals of Wayne County. Many members of the county medical society have enrolled for bedside examination, clinical conferences, laboratory studies and the courses in anatomy, pathology, physiology and physiologic chemistry. Ten Detroit hospitals are participating in this program.

Harvard Opens New Dental School

The new Harvard School of Dental Medicine was opened September 23 with nine carefully selected students from widely separated parts of the country composing the first year class. The dean of the new Harvard School of Dental Medicine is Dr. Leroy M. S. Miner, who is also a professor of clinical oral surgery. The new school was made possible by an endowment of $1,500,000, mainly from gifts of the Carnegie, Rockefeller and Markle foundations. The maximum number of students to be accepted under the plan of instruction in any one class is set at fifteen for the present. The Harvard Dental School will continue its present course for three years more, until members of the present second year class are graduated. Dr. Miner said that the opening of the school marks the beginning of an important experiment in American dental education. Students in the new school will be occupied for the majority of five calendar years in a combined course of dentistry and medicine, and at the end of that time successful candidates will receive both the M.D. and the D.M.D. degrees. The student will receive the basic training in medicine required of all physicians without sacrificing the essential training in the restorative and reparative technics of dentistry which are important and it is hoped in addition, the dean said, will be equipped to carry on

further study on the causes of dental disease and its prevention. In addition to Dr. Charles Sidney Burwell, dean of the faculty of medicine of Harvard Medical School who will be chairman of the committee on instruction of the new dental school, the faculty will comprise thirteen men who now serve the Harvard Dental School and the following three men who have been called from elsewhere to work in the development of a new program: Joseph W. Ferrebee, M.D., associate professor of dental medicine, formerly of the College of Physicians and Surgeons, New York; Martin L. Deakins, D.D.S., formerly of the University of Rochester School of Medicine and Dentistry, Rochester, N. Y., and Charles M. Waldo, D.D.S., assistant professor of orthodontics, formerly of the University of Michigan School of Dentistry, Ann Arbor. Dean Burwell of Harvard Medical School said that the integration of medical education and dental education that is represented by this new course of study is the natural result of a steady trend in teaching in the Harvard Dental School during recent decades.

Films of the Chests of California Students

The University of California at Berkeley will inaugurate this fall a program for the detection of abnormalities of the chest, especially tuberculosis, among its students. A new roentgen apparatus which will take miniature pictures of the chest economically has been ordered in which a fluorescent screen is substituted for the usual roentgen film and a picture is taken of the image on the screen with a small camera. Thus a permanent record may be made which can be used at any subsequent time during the student's career. Dr. Chesley Bush, consultant in diseases of the chest at E. V. Cowell Memorial Hospital in Berkeley, is said to have been responsible for initiating the program, which will be carried out by Drs. Elizabeth S. Heald and James T. Harkness of the Cowell Hospital staff.

Prizes Awarded at Jefferson

The following prizes, among others, were awarded by Jefferson Medical College of Philadelphia at the commencement June 6:

The Henry M. Phillips Prize of $75. Awarded on the recommendation of the professor of medicine to the graduate, in his opinion most worthy, to Grover Cleveland Powell Jr. '41.

The Henry M. Phillips Prize of $75. Awarded on the recommation of the professors of surgery to the graduate, in their opinion most worthy, to Clyde Cornelius Greene Jr., with Honorable Mention of Earl William Schafer Jr. and George Francis Catlett.

Practice Prize. A gold medal awarded by bequest of Dr. Francis W. Shain for the best essay on a subject pertaining to the practice of medicine, to Grover Cleveland Powell Jr.

Surgery Prize. A gold medal awarded by bequest of Dr. Francis W. Shain for the best essay on a subject pertaining to surgery, to John Charles Cressler, with Honorable Mention of Wesley Rhys White and Ralph Monroe Bell.

Gynecology Prize. By Professor Scheffey, $25 for the best examination and clinical report on gynecology, to Lloyd Ralph Forcey, with Honorable Mention of Frederick Balthas Wagner Jr., Earl William Schafer Jr. and Edwin Homer Tallman.

Otology Prize. By Professor Williams, $25 for the best examination in otology, to Hubert Horace Washburn, with Honorable Mention of Frederick Alexander Robinson Jr.

Clinical Surgery Prize. A gold medal for general excellence in clinical surgery, in memory of Francis Torrens Stewart, professor of clinical surgery, Jefferson Medical College, 1910-1920, to Oscar Creech Jr., with Honorable Mention of John Charles Cressler and Frederick Balthas Wagner Jr.

Obstetrics Prize. By Professor Vaux, $25 for the best examination in obstetrics, to Frederick Smith Derr, with Honorable Mention of Rufus Edward Palmer III.

Pediatrics Prize. By Professor Bauer, $25 for the best examination in pediatrics, to Grover Cleveland Powell Jr., with Honorable Mention of Hubert Horace Washburn and John Charles Cressler.

Ophthalmology Prize. By Professor Shannon, $25 for the best examination in ophthalmology, to Frederick Balthas Wagner Jr., with Honorable Mention of William Allen Longshore Jr. and Charles Lane Schucker.

Tie in Highest Scholastic Standing at Indiana

Dr. Marcus Ravdin of Evansville, Ind., presented gold keys on May 16 to Jack R. Hall and Lowell L. Henderson of the graduating class of Indiana University School of Medicine, Indianapolis, who tied for the highest general average grade for the four years of study. In former years it was Dr. Ravdin's custom to present a medal to the student having the highest general average.

Fellowship Awarded

The Kirstein Fellowship at Harvard Medical School, Boston, was awarded for the summer to Dr. Israel Kapnick at Providence, R. I., who was studying at the Massachusetts General Hospital, Boston. Dr. Kapnick, a graduate of Brown University received his M.D. degree from Harvard in 1938.

Student Aid Foundation of Michigan

The Student Aid Foundation of Michigan announced September 24 that sixteen persons have been awarded scholarships to Wayne University for the current year. Other collegiate institutions for which students have been awarded scholarships by this foundation include the University of Detroit, University of Michigan and several state owned colleges, as well as twelve colleges and universities outside of Michigan. The Student Aid Foundation of Michigan is a corporation financed by the McGregor Fund.

Wisconsin State Board Questions in Surgery

Following are the questions in surgery used at the June 25, 1941 examination held by the Wisconsin State Board of Medical Examiners:

(Answer eight only and number accordingly)

1. Discuss the management of a middle aged person, picked up in the street in an unconscious condition, with a lacerated wound in the scalp?
2. Discuss diagnosis and treatment of a complete fracture of the middle one third of the clavicle.
3. Outline your choice of treatment of osteomyelitis in long bones.
4. Discuss the advantages of a vaginal hysterectomy in a comparative choice of operation.
5. Give your method of treatment and management of a carbuncle on the back of the neck.
6. Outline your treatment of definite fractures of the hip in elderly people.
7. What is basal anesthesia?
   (*a*) Drugs used and dosage?
   (*b*) How and where administered?
   (*c*) Indications and contraindications?
8. State briefly the etiology, symptoms and treatment of septic peritonitis.
9. What is the heart risk (or danger) in a major surgical operation.

"DO YOU KNOW WHAT PHYSICIAN"

Following are answers to the questions appearing on page 1481:

1. William G. Atherstone (1814-1898), who studied medicine in Dublin and Heidelberg, where he graduated in 1839. He returned to South Africa and took great interest in public affairs. He was also a geologist, botanist, artist and musician and from his researches may be traced the beginning of the great diamond mines of South Africa.

2. Dr. Henry J. Bigelow (1816-1890) of Boston, who graduated from Harvard Medical School in 1841 and on Nov. 18, 1846 published in the *Boston Medical and Surgical Journal* a paper entitled "Insensibility During Surgical Operations, Produced by Inhalation," which was one of the first papers on anesthesia to be published. In 1869 Dr. Bigelow published a book entitled "The Mechanism of Dislocation and Fracture" in which he described the ileofemoral (Y) ligaments.

Book Notices

Applied Pharmacology. By A. J. Clark, M.C., M.D., F.R.C.P., Professor of Materia Medica and Pharmacology in the University of Edinburgh. Seventh edition. Cloth. Price, $5.50. Pp. 672, with 92 illustrations. Philadelphia: Blakiston Company, 1940.

When most medical writers suffer from comprehensive megalomania, educators would do well to examine this book as a model. Sensible in size, it contains an adequate number of the most important drugs. It has cut down "acreage" to cultivate better a smaller domain. It emphasizes fundamentals and builds a solid foundation. This is good psychology and makes for good pedagogy. The scientific evidence for the therapeutic action of the more important drugs is given. The student often fails to appreciate the connection between pharmacology and therapeutics because he is taught these subjects at different stages of his career. This creates a gap the bridging of which is one of the aims of this book. The author is the successor to a chair held by Fraser and by Cushny. Like them, he appreciates scientific foundations in the study of medicine. He is equally aware that pharmacology in the medical school should be taught with a definite goal in mind, i. e. its application to the practice of medicine. He realizes also that such a goal should not minimize but develop a scientific foundation. An increase in the size of the book has been avoided by deleting material that appears to be no longer of any great importance. Revision of this kind takes courage, but it is the badge of a leader. New chapters have been added describing the action of sulfonamide derivatives and the pharmacology of the hemopoietic system. The subject is presented in thirty-five chapters. General principles, the administration of drugs, vitamins, anthelmintics, the action of disinfectants and the actions of radiations are each given a chapter. Chemotherapy is given four chapters. The other chapters are devoted to the various physiologic systems. The space allotted to each seems well distributed. If one's aim is to find fault, it can always be done, but finding fault should be followed by a suggestion for material improvement, and this is a problem in which the author commands respect. The real student will find valuable help in this book. The author says that the limits of the book prevent adequate discussion of preliminary questions of physiology and pathology, but in many cases he has given a short abstract of the most likely explanations of these problems, stating that often such views are of necessity dogmatic and represent only one opinion of controversial subjects. The tone of the book is stimulating. It recognizes that to date only a partial explanation can be given for a few of the simpler effects produced by drugs.

Fluorescent Light and Its Applications Including Location and Properties of Fluorescent Materials . . . A Theoretical and Practical Exposition of Fluorescence and Similar Phenomena. By H. C. Dake and Jack De Ment, Research Chemist, The Minerologist Laboratories, Portland, Ore. Cloth. Price, $3. Pp. 256, with 25 illustrations. Brooklyn: Chemical Publishing Company, Inc., 1941.

As indicated by the authors of this book, fluorescent light and its applications represent the work of many minds and many hands extending over an interval of many years. The aim of the authors is to present a summary covering a wide range of applications of fluorescent light to meet the needs of a wide range of readers—professional scientists and those without technical training.

Of the eleven chapters the first four, comprising sixty-nine pages, may be considered introductory. These introductory chapters discuss (1) the historical aspects of luminescence (particularly fluorescence), (2) radiation, the eye and color perception, (3) classification of the various types of luminescence and methods of excitation (thermal, chemical, roentgen ray, frictional) and (4) theories of luminescence (the presence of traces of a material that is an "activator" of the substance).

Recently the public has shown a renewed interest in fluorescence, and the various information services are plied with questions that are answered in the six following chapters of this book: chapter 5 on methods of examination and technic, chapter 6 on sources of ultraviolet radiation (some twenty-eight pages on lamps and filters) to excite fluorescence and chapter 7 (twenty pages) on fluorescent minerals. In this respect the book is very timely. Chapter 9 (ten pages) is devoted to the luminescence of gems and collections of fluorescent gems, and chapter 10 (ten pages) describes some notable collections of fluorescent minerals, including a description of applications of fluorescent minerals in ornamental construction, e. g. fireplaces.

Chapter 11 (some fifty-five pages), on uses of ultraviolet light, contains information of fluorescence as applied in chemistry and fluorescent lighting. There is a discussion of applications of ultraviolet light (fluorescence) in crime detection, in medicine and in biology. The application of ultraviolet radiation as a germicide would not have received such an enthusiastic endorsement (p. 179) if the writers had considered the fact that a direct hit of ultraviolet rays is required to kill a bacterium and that a finger mark or lipstick grease will shield a germ that may be on the edge of a drinking cup. These digressions on the use of ultraviolet radiation in identification, crime detection and disinfection make interesting reading to the layman, but the expert probably will want to consult more authoritative and comprehensive presentations on the subject.

Several pages are devoted to the use of ultraviolet light in mining and prospecting in detecting minerals by fluorescence. A bibliography of twenty pages gives extensive references to the whole subject.

As a whole this book is interesting and informative, but the last chapter lacks discrimination in selection of material. For example the citation of luminescence of animals (p. 208) is interesting but it is irrelevant. Interjected between two paragraphs on fluorescence, (1) in cutaneous disorders (trichophytosis, ringworm) and (2) in chlorophyll, the reader might infer that the firefly emitted its light by fluorescent excitation by ultraviolet rays. It so happens that the body fluid of the firefly contains a substance that emits a bluish fluorescent light; but the authors do not mention this fact. Moreover there is no recognized connection between the fluorescent substance in the body fluid of this insect and the light emitted by it. Overlooking these minor digressions from the main topic, the book should serve a useful purpose to those seeking enlightenment on fluorescence and its applications.

Clinical and Experimental Investigations on the Genital Functions and Their Hormonal Regulation. By Bernhard Zondek. Cloth. Price, $4.50. Pp. 264, with 59 illustrations. Baltimore: Williams & Wilkins Company, 1941.

This monograph presents a summary of the clinical and experimental investigations which Zondek has carried out in Jerusaleum since 1935. These studies are a continuation of the work done by him in Berlin and deal entirely with the female genital function and the gonadal and gonadotropic hormones connected with this process. At the beginning of the book is a valuable survey of the historical development of sex endocrinology. In it the author refers not only to his own research but also to the valuable contributions of others. The book is divided into six parts: (1) the occurrence of some estrogenic substances in nature, (2) experimental and clinical investigations on the percutaneous use of estrogenic and androgenic hormones, (3) the effect of protracted treatment with high doses of estrogenic hormone, (4) the fate of the sex hormones in the organism, (5) clinical investigations concerning the cycle of the female organism and (6) the mechanism of menstruation.

Zondek still uses the term prolan to indicate the chorionic gonadotropic hormone, but most endocrinologists, at least in the United States, have discontinued this term.

Among the author's results may be mentioned the following: The urine of one pregnant mare yields as much estrogen as can be obtained from one thousand five hundred women. Testosterone is more readily absorbed through the skin when it is in alcoholic solution than when in oily solutions. Large doses of estrogen eliminate the somatropic and gonadotropic functions of the anterior pituitary lobe, but the thyrotropic and parathyrotropic hormones are not decreased. Prolonged administration of estrogen produces hyperemia of the myometrium and endometrium, glandular cystic hyperplasia of the endometrium, necrosis of the endometrium and aseptic suppuration of the uterine cavity. Even when doses of estrogen up to 800,000 international units have been used in women, cancer was not observed. Menstruation can be inhibited by giving estrogen, because this hormone blocks the gonadotropic secretion of the

anterior pituitary, thereby interfering with the development of the corpus luteum and progesterone. When gonadotropic hormones are administered with estrogen, ovarian degeneration is prevented. The sex hormones (gonadotropin, estrone and progesterone) are rendered inactive a short time after their administration. In secondary amenorrhea progesterone can induce bleeding, but in primary amenorrhea this hormone alone fails. The loss of ovarian function is characterized by an increased excretion of gonadotropic substance in the urine because of the absence of any inhibitory action of the ovary on the anterior lobe. Insufficient glycogen was found in the secretory endometrium of 18.4 per cent of all cases of sterility. Zondek believes that the young fertilized ovum cannot be embedded if it does not find sufficient glycogen in the uterine mucosa.

This book should be read by every one who is interested in endocrinology and gynecology. It is well written, is abundantly illustrated and has an extensive but selected bibliography.

Schizophrenia in Childhood. By Charles Bradley, M.D., Medical Director, Emma Pendleton Bradley Home, East Providence, Rhode Island. Cloth. Price, $2.50. Pp. 152. New York: Macmillan Company, 1941.

This small volume has been made possible by the beneficence of the Supreme Council, Thirty-Third Degree Scottish Rite Masons of the Northern Jurisdiction, and it is one of many researches on dementia praecox which they have sponsored.

The evolution of the concepts of dementia praecox and schizophrenia is presented briefly. Kraepelin and Bleuler had in mind definite disease processes, quite in contrast to Adolf Meyer's concept of a person who remains the center of attention and who must be studied in terms of his actions, his work, his accomplishments.

The volume is valuable for its brief review of literature, especially nomenclature used in the past to designate psychoses in childhood. Prior to 1900 the reports of such were meager. Up to 1925 the kraepelinian influence is pointed out and after that date its decline is noted. The incidence of schizophrenia prior to puberty is thought to be rare. Even the prepuberal psychotic episodes in the lives of those destined to have schizophrenia in adulthood are infrequent, as Gray has pointed out. More boys than girls are affected, in the ratio of perhaps 2 or 3 to 1. The earliest age recorded with this diagnosis was 2½ years.

The criteria for making a diagnosis of schizophrenia among adults are not entirely suitable for making it in childhood. The usual adult types (catatonic, hebephrenic) are not usually seen. The chief groupings to be observed are those with acute and chronic onset. The difficulties of differentiation from other disorders, such as mental deficiency or encephalitis, and also unusual behavior in normal children, are discussed.

The chief symptoms essential to the postulation of childhood schizophrenia are "diminished interest in environment, emotional disturbances, regressive symptoms, motor behavior disturbances, speech and thinking disturbances, hallucinations and delusions." It is difficult to decide which symptoms are primary and which ones are secondary. Etiologic factors are unknown. There are no neuropathologic studies which regularly correlate brain disease with these afflictions. Laboratory experiences of other types have not helped in the understanding of such children. The electroencephalogram has revealed suggestive changes. Psychometric tests give evidence of an increased scatter and decline of intelligence quotient. Rorschach tests help by pointing out clues to the changes taking place.

Prognosis is reported to be particularly bad. Treatment thus far has been of little avail. However, shock, drugs and general guidance and care have not received sufficient trial to estimate their real worth.

The author writes with some hesitation about the distinguishing features that make this a unified syndrome. This uncertainty appears to be little more than a reflection of the feeling that so-called schizophrenia in adults constitutes a composite word picture about certain kinds of maladaptations of differing persons—indeed a very vague syndrome as compared with lobar pneumonia. Doubtless more knowledge of all types of preadolescent psychoses will be helpful in understanding serious pitfalls in childhood. If, instead of trying to delimit a syndrome, the author had seen its broader relationships to childhood, as for example the deterioration of the imagination (Galton), the variability in the evolution of language and thinking (Piaget) or the factors that lead to the present concepts of convulsive therapy (Meduna), pubertas praecox and so on he would have placed these disorders of children in a more understandable milieu. Janet has said that hard and fast lines are drawn by men and not by nature.

Physicians and others interested in the disabilities of childhood will find in this volume much thought provoking material.

The Control of the Lead Hazard in the Storage Battery Industry. By Waldemar C. Dreessen, Passed Assistant Surgeon, et al. From the Division of Industrial Hygiene, National Institute of Health. Prepared by Direction of the Surgeon General. Federal Security Agency, U. S. Public Health Service. Public Health Bulletin No. 262. Paper. Price, 30 cents. Pp. 138, with 42 illustrations. Washington, D. C.: Supt. of Doc., Government Printing Office, 1941.

This is a study of the health of 766 storage battery workers in six plants and of the diagnostic value of several laboratory tests. The proportion of workers with early plumbism, classified by atmospheric exposure to lead, rises from 4 per cent for men exposed to less than 0.74 mg. of lead in 10 cubic meters of air to 54 per cent for men exposed to more than 3 mg. of lead per 10 cubic meters of air. There are no important time trends. Nine men had a combination of clinical and laboratory signs that warranted a diagnosis of incipient plumbism. No disabling plumbism was seen. Relatively few men complained of ill health, and there was only a small correlation between the frequency of a complaint and the concentration of lead in the atmosphere to which the workers were exposed. Each of the 9 men had a blue or metallic lead line on his gums. Only 2 were underweight. These 2 had the highest proportion of abnormally staining erythrocytes, the lowest red cell counts and the lowest hemoglobin values. In general there is an increase in the value of lead in both blood and urine with an increasing atmospheric concentration of lead. This correlation was not so close that a man's atmospheric exposure to lead could be predicted on the basis of either or both of these values. Persons whose condition is diagnosed early plumbism tend to have higher blood and urinary concentrations of lead than similarly exposed but nonaffected workers. With increased blood and urinary concentration the probability of plumbism increases. The average reticulocyte percentage value and stippled cell count increases with increasing atmospheric concentrations of lead, and it increases with increasing length of employment. Workers exposed to atmospheric concentrations of lead in excess of 3 mg. in 10 cubic meters of air had a significantly lower average erythrocyte count than those exposed to less than 0.4 mg. of lead in 10 cubic meters of air. There was little variation of hemoglobin. Albuminuria was found twice as frequently among lead affected workers as among nonaffected workers. There were no significant increases in cardiovascular disease among exposed workers. It was concluded on the basis of the data presented that it does not seem appropriate to designate certain critical values for blood or urinary concentrations of lead as having diagnostic significance. Equipment and practices found to be effective in reducing exposure to lead are discussed.

Fractures. By George Perkins, M.C., MCh., F.R.C.S., Assistant Orthopaedic Surgeon to St. Thomas's Hospital, London. Cloth. Price, $6.50. Pp. 384, with 401 illustrations. New York & London: Oxford University Press, 1940.

It is customary for an author to include a foreword or preface giving some explanation, often savoring of an apology, for writing the book. There are several untouched leaves in the forepages which might have been used for such a purpose, but the author leaves the reviewer completely in the dark as to just what purpose he had in mind for this book. However, the fact that the author, George Perkins, M.C., M.Ch., Oxon., F.R.C.S., is a member of the staff at St. Thomas's Hospital lends weight to the book.

It is difficult to review the book even though the subject matter is well organized and well presented. The first part is devoted to general consideration of fractures and has much sound teaching in it. Fracture treatment, according to the author, should be divided into four stages: first, reduction; second, fixation until union; third, protection until consolidation, and fourth, although he gives no definite heading for this stage, it might well be called restoration of function.

The book is didactic and individualistic. There is not the least attempt to discuss methods recognized and utilized by others; for example, in discussing the treatment of ununited fractures of the neck of the femur the author does not even mention the bone graft, the Whitman operation and the Brackett operation—all well recognized procedures in the United States—the McMurray osteotomy being the only one mentioned.

Probably the purpose of the book was to put into the hands of Mr. Perkins's undergraduate students a synopsis of his lectures; if so, this end has been adequately attained. However, for the graduate student working toward an advanced degree the book would be entirely too narrow in scope, for there are practically no references made to methods advanced by others who have contributed greatly to the treatment of fractures. Therefore the book cannot be recommended for general use, although valuable and interesting because it represents the practices in vogue at St. Thomas's Hospital in London.

The illustrations are outline pictures and adequately portray what the author wishes to convey. Throughout the book portions of pages are left unfilled, and it may be that these are for additional notes by the author's students. The book contains much valuable information and there is ample evidence in it that the author is a keen clinical observer and that he has had a large experience. The fact that the trying times through which those in the medical profession in London are going did not defer the publication of this book is further evidence that our English confrères are made of stern material. Furthermore, it is well known that the German bombs have well nigh destroyed the stately St. Thomas Hospital. In spite of this the staff carries on, and we in America would do well to salute its members.

Manual of Human Cross Section Anatomy. By Dudley J. Morton, M.D., Associate Professor of Anatomy, College of Physicians and Surgeons, Columbia University, Raymond C. Truex, M.S., Ph.D., Instructor of Anatomy, and Carl E. Kellner, Departmental Artist. Cloth. Price, $6. Pp. 249, with 90 illustrations. Baltimore: William Wood & Company, 1941.

The manual is a laboratory notebook consisting mainly of outline drawings of cross sections of the adult human body. It is intended that the students will fill in these drawings and label them completely. With each section there is a list of structures for the students to locate. The authors suggest that this manual be used with a series of colored lantern slides which they have also prepared. They point out that the advantage of this manual is that it makes unnecessary the preparation of cross sections for the course and that the students will have a complete book of cross sections labeled by themselves, and better than the few badly soiled drawings which students usually make directly from the adult cross sections in the average cross section anatomy course as it is given in this country. The reviewer, however, does not believe that wax models impressed from actual cross sections, and kodachrome photographs of these wax models, can ever take the place of natural material. Many anatomists feel that, while cross sections are messy for students to handle and are difficult to keep in good condition, the actual cross sections have the advantage that they may be further dissected by the student so that a given artery or nerve, for example, may be traced through the thickness of the section and from section to section. This criticism, moreover, implies that a course in cross section anatomy is of little value to undergraduate medical students who have not yet had any clinicial experience. Many surgeons as well as anatomists feel that cross section anatomy is not of much value to the undergraduate medical student.

Annual Report of the Malaria Advisory Board, Federated Malay States, for the Year 1940. By A. Neave Kingsbury, Chairman, Malaria Advisory Board, F. M. S. Paper. Price, $1; 2s. 4d. Pp. 30. Kuala Lumpur: Federated Malay States Government Press, 1941.

This annual report may be of interest to those active in the prevention and treatment of malaria. The booklet is divided into eighteen sections. Of primary interest are those portions discussing the incidence and control of malaria, and supplies of antimalarial drugs and antilarval preparations. The mortality rate in 49,000 hospitalized cases was 2.2 and the monthly totals of malaria cases showed a similarity of pattern for all the states. Because of wartime conditions the supply of antimalarial drugs has been threatened and the board has advised building up reserve stocks of quinine and other antimalarial agents. The discussion of this problem pertinently points out that an army moving through malaria infested territory might have to resort to mass prophylaxis. In the discussion on experiments with antilarval preparations it is succinctly suggested that manufacturers, before attempting to market an antimalarial preparation, would do well to realize that they have to compete with an efficient and relatively cheap insecticide—oil. Further, one is reminded that field experiments may reveal that a mixture showing the best antilarval properties is not the same as the optimal one developed in laboratory experiments; and control problems are not necessarily the same in all areas and may differ radically with the vector species and other factors.

Cerebrospinal Fever. By Denis Brinton, D.M., F.R.C.P., Physician In Charge of the Department for Nervous Diseases, St. Mary's Hospital, London. Cloth. Price, $3. Pp. 163, with illustrations. Baltimore: William Wood & Company, 1941.

In the preface the author states that "pictures have been deliberately avoided except for four photographs of the sulfonamide eruption" and "but the dreary repetition of pictures used in most accounts of cerebrospinal fever during the last twenty-five years has not commended itself." This point of view in respect to the value of illustrations is in harmony with that of other British medical writers. But what is much more important, antiquated expressions concerning the pathway of the organism and the pathology of the disease have been supplanted by modern conceptions. All aspects of the infection, including a brief history, are presented in concise form. Particular attention is given to chemotherapy, a preference for sulfapyridine being shown. Commendation seems to be bestowed on English clinicians for innovations in treatment which they have inaugurated since 1937, the year of the advent of chemotherapy. But approximately three years earlier intrathecal treatment was discarded and spinal fluid drainage as a therapeutic measure abandoned in at least three hospitals in this country. The author's conclusion that serum is no longer required when chemotherapy is properly applied is correct, without doubt. But some of the fatality rates quoted for chemotherapy are no lower than figures attained in this country when patients were treated with serum intravenously but without any intraspinal therapy. Too often insufficient consideration is given to the important part played in recovery by the withholding of intrathecal administration of serum. At the close of the volume, preceding a good index, there are approximately three and one-half pages of valuable references; most of these naturally concern British authors. The unprecedented high incidence of cerebrospinal fever in the British Isles will almost certainly be followed by greater prevalence here. This probability should make the subject specially interesting at this time.

Herzkrankheiten. Band I: Physiologie, Beurteilung und funktionelle Pathologie des Herzens. Von Prof. Dr. Max Hochrein, Direktor der Medizin. Universitäts-Poliklinik Leipzig. Paper. Price, 17.25 marks. Pp. 480, with 170 illustrations. Dresden & Leipzig: Theodore Steinkopff, 1941.

This book resembles in format the one dealing with coronary disease previously published by the author, except that the topic is diseases of the heart rather than those of its blood vessels. This is the second of a trilogy, the last volume of which is to deal with the therapy in heart disease. It is interesting that, despite the energies devoted to destruction, time and energy seem to be available in Germany to write and publish books for the amelioration of disease.

The author takes occasion to incorporate his own work and his extensive knowledge of the literature which he has accumulated in the course of many years of diligent effort in this field. It contains non-German as well as German literature, with a large representation of recent American work. The bibliography is extensive and representative. This work is modern in that the subject is introduced by a section on the recent extensive advances in the physiology of the heart. This physiologic approach is maintained throughout the monograph. The second section deals with the method of physical examination and history taking, together with the newer instrumental methods by which the diagnosis of heart disorders is enhanced, some of which might be considered of more theoretical than practical benefit in this country. The last section deals with the

pathologic physiology of cardiac failure and the pathology and clinical diagnosis of the various types of heart disease. It also deals with the relation of the heart to other disorders of the body. As might be expected with the present interest in Germany, in the closing chapters of the book the relation of the heart to exercise and trauma are stressed. In the last chapter the relation of the heart to age is developed.

The reader will find this volume of considerable importance, particularly in obtaining the point of view of one of the best of the more modern German cardiologists. It is to be recommended more as a source of information than as a systematic textbook for immediate practical use. On that account it is primarily of value to the specialist in heart disease rather than to the general practitioner.

Clinical Aspects of the Electrocardiogram Including the Cardiac Arrhythmias. By Harold E. B. Pardee, M.D., Assistant Professor of Clinical Medicine, Cornell University Medical College, New York. Fourth edition. Cloth. Price, $5.75. Pp. 434, with 219 illustrations. New York & London: Paul B. Hoeber, Inc., 1941.

After eight years many will welcome another edition of this book, which first appeared in 1924. Terse presentation and a more lucid style would aid the beginner in assimilating the valuable material presented. The text abounds with references to illustrations. Were these more abundant and properly distributed with pagination indicated, frequent search for them, often extending over many pages, would be eliminated and much of the reader's time conserved. Approximately half of the illustrations appeared in the first edition. Legends have been modernized where necessary. Of the remainder, eighteen deal with various chest leads, five of these being concerned with anterior and posterior infarctions. The author describes the numerous varieties of chest leads and recommends that four (EF_2, EF_3, IVF and CF_5) be routinely employed, an additional chest lead (CF_6) being used in the presence of cardiac enlargement. This choice does not represent the consensus. The number recommended is not practical for routine clinical use. Justification for two new chest leads, from the level of the ensiform, based on orthodiagraphic studies with the patient in the erect position, is yet to be demonstrated. A mathematical discussion of vector analysis and Einthoven's triangle occupies almost sixty pages. The author's views regarding nomenclature are virtually as they appeared in the original article. A chapter of thirty-six pages is devoted to the description and operation of the electrocardiograph, the discussion, in part, being complicated by reference to illustrations of an obsolete model which appeared in the first edition. Nevertheless the book affords much valuable information. Opinions at variance with majority views are relatively few. Variations from standard terminology are minor. In spite of the excellent quality of some recent contributions, this remains one of the best.

Lymphatics, Lymph, and Lymphoid Tissue: Their Physiological and Clinical Significance. By Cecil Kent Drinker, M.D., D.Sc., Professor of Physiology, School of Public Health, Harvard University, Boston, and Joseph Mendel Yoffey, M.Sc., M.D., F.R.C.S., Senior Lecturer in Anatomy, University College of South Wales and Monmouthshire, Cardiff, Wales. Cloth. Price, $4. Pp. 406, with 50 illustrations. Cambridge: Harvard University Press; London: Oxford University Press, 1941.

The primary purpose of this book is to present the physiologic and clinical significance of the lymphatic system in animals; accordingly, the authors have attempted to discuss the relation of the lymphatic apparatus to animal function. In addition to a fairly complete bibliography and the well arranged and thorough author and subject indexes, the contents include nine chapters devoted to anatomic and physiologic organization of the lymphatic apparatus, permeability of blood capillaries and its relation to lymph formation, permeability of lymphatics, lymph flow and lymph pressure, chemical composition and physical characteristics of lymph, biologic significance of lymphoid tissue, cell content of lymph, the lymphocyte and practical considerations.

This volume represents a wealth of material on the physiology of the lymphatic system and should serve as an authoritative source of information. While the book, in general, may appeal only to the laboratory or clinical investigator, the section entitled Practical Considerations will interest all members of the medical profession as it discusses items such as circulatory edema, edema due to hypoproteinemia, hypertension, anaphylactic shock, acute inflammation, relation of the lymphatic system to blood infections, surgical shock, effect of anesthetics and therapeutic increase in lymph flow. Not all readers will agree with the authors in some of their interpretations, but this can be expected where there are as many controversial problems as in the physiology of the lymphatic system. However, the authors state that they are provided with a certain degree of assurance in passing their opinions because they have been able to utilize a large number of the facts uncovered in their laboratory. Further, the authors have extensively consulted the communications of many other investigators.

Problems of Psychoanalytic Technique. By Otto Fenichel. Translated by David Brunswick. Paper. Price, $1.50. Pp. 130. Albany: Psychoanalytic Quarterly, Inc., 1941.

This volume was published in serial form in the *Psychoanalytic Quarterly* during 1940 by a former German psychoanalyst. The work was originally written in German and subsequently translated into English. The author has been the "textbook writer" of psychoanalysis during the last decade and apparently has adopted the role of interpreter of Freud. He has gathered together data concerning several technical problems and presents the material in easily understandable form, usually adhering to general principles. The book is authoritative and generally valuable, but the student should be cautioned against expecting to learn technic from this or any other textbook. Only from much personal experience is this possible.

Aids to Anatomy (Pocket Anatomy). By Edward P. Stibbe, F.R.C.S., Professor of Anatomy, University of London, King's College, London. Tenth edition. Cloth. Price, $1.50. Pp. 369, with 50 illustrations. Baltimore: Williams & Wilkins Company, 1940.

This little pocket anatomy is one of the Students' Aids Series. It is only 5/8 inch thick and 4 inches across. It is essentially a tabulation intended for a review of anatomy by surgeons who have in prospect the surgical examinations. As such it can be highly recommended despite a little carelessness in diction, as for example on page 12, where "opening the jaw" must mean opening the mouth. The fact that this is the tenth edition is evidence of its popularity.

The Biologic Fundamentals of Radiation Therapy: A Textbook. By Friedrich Ellinger, M.D., Research Fellow, Radiotherapy Department, Montefiore Hospital, New York. With a preface by Maurice Lenz, M.D., Associate Clinical Professor of Radiology, Columbia University, New York. English translation by Reuben Gross, M.D., 1st Lieut. M. C., U. S. Army. Cloth. Price, $5. Pp. 360, with 79 illustrations. New York: Elsevier Publishing Company, Inc.; Distributors: Nordeman Publishing Company, Inc., 1941.

This is the American edition of the book published in Berlin in 1935. It is divided into five parts, the first part being devoted to the action of roentgen rays and radium rays on different tissues, the second part to the action of the corpuscular rays, the third part to the action of ultraviolet rays, the fourth part to the action of visible light and the fifth part to general radiation biology and therapy.

For any one such as an internist, surgeon or radiologist who wants to have available a brief textbook on the biologic action of different radiations, together with an extensive bibliography of the subject, this is the book. However, for those who want more detailed information this work would be rather too brief. Therefore for radiologists who really want to know how rays act on certain tissues a definite and satisfactory answer would probably not be found. The analyses and opinions expressed are, on the whole, sound, although here and there an exception might be taken to certain statements.

A Primer for Diabetic Patients: An Outline of Treatment for Diabetes with Diet, Insulin and Protamine-Zinc Insulin Including Directions and Charts for the Use of Physicians in Planning Diet Prescriptions. By Russell M. Wilder, M.D., Ph.D., F.A.C.P., Professor and Chief of the Department of Medicine of the Mayo Foundation, University of Minnesota, Minneapolis. Seventh edition. Cloth. Price, $1.75. Pp. 184, with 9 illustrations. Philadelphia & London: W. B. Saunders Company, 1941.

This edition of Dr. Wilder's diabetic primer brings the treatment of diabetes mellitus, as carried out in the Mayo Clinic, up to date. It is clear and concise and a good book for any diabetic patient or any doctor. All physicians who believe in the orthodox treatment of diabetes will find it helpful and can safely supplement the instruction of their patients with it.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

TECHNIC OF BLOOD TRANSFUSION

To the Editor:—**Difficulties in the way of the clotting of blood have developed in the process of obtaining blood for use in transfusions. My associates and I are using 10 cc. of a physiologic solution of sodium citrate for each hundred cubic centimeters of blood. Some of the men start out by taking about 25 cc. of the citrate solution and using it to citrate the tubing and the bottle and then collect 500 cc. of blood and add 25 cc. of the citrate solution after finishing the collection of blood. Others put all 50 cc. of the solution in at the start. Some of the men whirl the bottle occasionally while the blood is flowing, and some actively agitate it while others do not move the bottle at all. All are successful in collecting blood without the formation of clots; that is, in the majority of cases. They all also get into trouble at times. As chairman of the intravenous committee of the staff, I have been advised to develop a "fool proof" technic. Up to the present I have been advising each man to use that technic which he had been using with success. Should more citrate solution be used? Should the blood be whirled and, if so, how violently? Aren't there individual differences in blood which no technic will completely cover? Is there any physiologic objection to a "cocktail" for the donor following the taking of blood? We are using the Abbott apparatus.**

Robert J. Nevin, M.D., Washington, Pa.

ANSWER.—The use of "10 cc. of a physiologic solution of sodium citrate for each hundred cubic centimeters of blood" should be adequate to prevent clotting when collecting blood for transfusion. However, one must be careful to prepare the physiologic or isotonic sodium citrate solution properly. In terms of sodium citrate such a solution contains slightly less than 3 Gm. of the salt per hundred cubic centimeters of distilled water. However, the salts usually employed for the preparation of the solution contain a certain amount of water of crystallization. The official salt of the U. S. P. XI contains two molecules of water, and a 3.2 per cent solution of this salt would be isotonic. The more commonly used salt, however, contains five and one-half molecules of water of crystallization and here the isotonic solution has a concentration of 3.8 per cent. If the last named salt is used in less than a 3 per cent concentration according to the calculation in terms of the sodium citrate proper, one would be working with a narrow margin of safety, and clotting might occur from time to time.

It is preferable to place the entire 50 cc. of solution into the bottle before collecting the 500 cc. of blood rather than to place only 25 cc. of citrate solution into the bottle and the remainder after the blood has been collected. Where there is difficulty in collecting the blood and the blood flows slowly, it is possible for clotting to occur if there is not enough citrate present to take care of all the calcium. However, if the blood is collected with reasonable speed, either procedure would be successful. The use of part of the citrate solution for flushing the tubing as mentioned in the query may prove helpful.

Violent agitation or stirring of the blood is unnecessary and undesirable, because this may result in damage to the red cells and platelets and in this way give rise to transfusion reactions. It is sufficient to whirl the bottle gently occasionally (about every fifteen to thirty seconds) while the blood is flowing to insure thorough mixing of the blood and citrate. The other alternative mentioned, namely not to move the bottle at all, is decidedly risky, since under these conditions thorough mixing of the blood and citrate would not occur. Incidentally, the thorough mixing of the blood and citrate is facilitated by the use of an oversized container, e. g. a quart bottle for collecting a pint of blood. When the disparity between the size of the container and the amount of blood is small, continuous shaking for one or two minutes after the total amount of blood has been collected is advisable to insure proper citration of the blood.

Present evidence suggests little possibility of individual differences in the blood itself which would interfere with the anticoagulant action of sodium citrate when the procedure is carefully carried out. There are, however, individuals with low blood pressure and a tendency to faint readily from whom there may be difficulty in obtaining a free flow. Under such circumstances clotting may be unavoidable at times. By appropriate measures to combat this tendency to faint, and by avoiding the use of donors with blood pressures under 110 systolic, such difficulties can be avoided.

No harmful effects have been observed following the consumption of a "cocktail" by the donor after withdrawal of his blood. In fact, this is almost a routine procedure in many institutions.

More complete information can be obtained from the numerous recent publications on the subject which are listed in the *Quarterly Cumulative Index Medicus*.

TESTING FOR PENTOBARBITAL AND AMPHETAMINE

To the Editor:—**A patient frequently appears under the influence of drugs, is confused, unsteady, at times difficult to rouse, shaky when roused, at times with nystagmus, and at times is said to have convulsions, always during the day. It is suspected that the patient takes considerable pentobarbital sodium frequently and at other times amphetamine. Thorough medical, neurologic and laboratory work-ups have revealed only normal data. Can you tell me any laboratory method or test for barbiturates and for amphetamine which are not extremely intricate or elaborate and which may be done in a hospital laboratory without extensive facilities? The patient denies use of drug.**

M.D., Massachusetts.

ANSWER.—There is no simple yet specific laboratory method for detecting either pentobarbital or amphetamine in the blood or urine.

Pentobarbital is generally identified by a modification of the technic developed by Koppanyi and his co-workers. This is based on the development of a reddish violet with the cobalt ion in a chloroform solution. It is supposed to be due to reaction with the malonylurea (barbituric acid) ring and it is therefore given by all the barbituric acid derivatives alike. Since pentobarbital is one of the barbiturates which is destroyed in the body, testing the urine seems inadvisable (although some color develops nonetheless). The test must be performed soon after administration of the drug because the blood concentration falls quickly. Delmonico (*Proc. Staff Meet., Mayo Clin.* **14**:109 [Feb. 15] 1939) found that pentobarbital is precipitated by tungstic acid, and he modified the test for use directly on whole blood. His method, which is quantitative, can be adapted for qualitative use and as such is probably the simplest and best test available.

From 25 to 50 cc. of oxalated whole blood is extracted with five volumes of chloroform. The addition of reagent calcium sulfate (plaster of paris) to the blood facilitates the extraction. The chloroform extract is shaken with acid-washed charcoal and filtered to remove any color. The chloroform is then evaporated down to 2 cc. on a steam bath. To this, in a test tube, are added 0.6 cc. of isopropylamine reagent and 0.1 cc. of cobaltous acetate reagent. Each of these solutions is made up in absolute methyl alcohol, 5 per cent for isopropylamine and 1 per cent for cobaltous acetate. The reaction develops a reddish violet, which gradually fades. About 85 per cent of the pentobarbital is recovered by this method, which can be made roughly quantitative by comparing the unknown with a known concentration of pentobarbital in chloroform solution.

If one of the longer acting barbiturates is suspected in this case, Delmonico's modification for urine should be tried. Acidify 25 cc. of urine with 10 per cent sulfuric acid and shake for a few minutes with an equal volume of chloroform. Separate, decolorize the chloroform solution by filtration through charcoal, concentrate over a water bath to 5 cc., and develop the characteristic reddish violet with Koppanyi's reagents as described.

Amphetamine can be determined in the urine by a color technic (Beyer, K. H., and Skinner, J. T.: *J. Pharmacol. & Exper. Therap.* **68**:419 [April] 1940) but the method is highly involved. Other organic compounds in the urine must first be removed by magnesium oxide, and then a color is developed with paranitrobenzenediazonium chloride. Since the drug is but slowly excreted—less than half in forty-eight hours—the urine at any time during that interval can be tested. The method is complex and calls for meticulous performance. Since it has here been adapted from a quantitative method, some experimental juggling may be necessary. Three samples should be run in parallel fashion, 100 cc. of each, one sample of the unknown urine, a second sample of amphetamine-free urine to which has been added 0.4 mg. of amphetamine sulfate for comparison and a third sample of amphetamine-free urine to serve as a blank.

Each urine is shaken on a mechanical shaker for one hour with 0.8 Gm. (0.2 Gm. per 25 cc.) of coarse magnesium oxide. It is essential that the magnesium oxide be so coarse that a suspension in water filters clears through two thicknesses of good filter paper. After shaking, 8 cc. of 10 per cent sodium hydroxide (2 cc. for each 25 cc. of urine) is added, and the solution is filtered. The filtrate contains about 80 per cent of the amphetamine freed from the other organic compounds in the urine. An aliquot portion of 25 or 50 cc. (depending on the concentration of drug) is extracted of its amine with three

successive portions of equal parts of purified petroleum benzin and toluene, shaken before separation for five minutes each. The amine is in turn extracted from the combined petroleum benzin-toluene fractions by three 10 cc. portions of 0.5 per cent hydrochloric acid. The combined aqueous solutions are evaporated to dryness on a steam bath under a hood, and the residue is taken up in 2 cc. of distilled water. To this is then added the diazonium compound which has been previously prepared as follows:

A stock solution of paranitroaniline is required, prepared earlier by adding 3 cc. of concentrated hydrochloric acid to 0.69 Gm. of paranitroaniline and then diluting to 100 cc. with water. Another stock solution contains 0.7 per cent of sodium nitrite made fresh weekly and stored in the refrigerator. Into a 100 cc. volumetric flask sumerged in an ice bath are placed 5 cc. of supernatant nitroaniline solution and 1 cc. of concentrated hydrochloric acid. After standing in the ice bath for ten minutes, 3 cc. of sodium nitrite solution is added, and after six minutes more in the ice bath the solution is diluted with water to 100 cc. It is now allowed to stand for two hours in a refrigerator as close to zero as possible before using. The solution now contains the paranitrobenzenediazonium chloride which must be used within eighteen hours.

To the 2 cc. of aqueous urine extract is added 5 cc. of cold diazonium solution, and the mixture is allowed to stand for one hour at room temperature. Now 5 cc. of 1.1 per cent sodium carbonate is added and the solution allowed to stand for another fifteen minutes. At the end of this time 1 cc. of 10 per cent sodium hydroxide is added to develop the color. This is put aside for ten more minutes before diluting to 50 cc. The color difference of the solutions may now be sufficient to detect the presence of amphetamine; but if not, the colored compound can be extracted with 15 cc. of normal butanol and the comparison made. Addition of a pinch of salt facilitates separation of the two layers.

PERSISTING SINUS OF BUTTOCKS

To the Editor:—**A man aged 43 was operated on for a carbuncle in the buttocks four years ago. After three months the incised area was apparently healed. Later a sinus developed at the site of the operation. Despite treatment with silver nitrate, phenol, allantoin, metaphen and other substances the sinus did not heal. I reoperated, incising the sinus and old scar tissue, curetted the tract and phenolized. After two months the area granulated in, but again a sinus formed at the same site. I have since used sodium morrhuate, sulfanilamide, red wash, Peruvian balsam and bismuth but failed to obtain healing. The sinus goes through an area of the buttock. It does not discharge but is moist. The blood Wassermann reaction is negative and the blood chemistry is normal. The basal metabolic rate is plus 5. Urinalysis is negative. Can you tell me what medical applications may be effective or what therapeutic measures should be followed to bring about healing of the sinus?**

M.D., New York.

ANSWER.—The persistence of any sinus tract generally implies that the site of origin has not been adequately treated. Most sinuses are the result of a foreign body such as dead tissue as in sequestration of bone in chronic tuberculous or nontuberculous osteomyelitis, or exogenous foreign material or the presence of a large dead space. Often, however, a sinus tract may be confused with a fistulous tract, the latter communicating possibly with the rectum through only a narrow opening. The possibility of a fungous infection should not be overlooked. In any case before adequate therapy can be instituted the nature, course and extent of the sinus must be understood.

From the history and course there are several features in this case of which no mention is made. It would be desirable to know whether the abscess as originally observed and incised was "sterile" as in tuberculosis or whether it possessed pyogenic material. Second, considerable aid in the diagnosis might be obtained by determining the course of the tract preferably by injection with a radiopaque substance, following its course by fluoroscopic examination. A roentgenogram of the pelvic bones and lower part of the spine would be of value in the event that osteomyelitis is the causative agent. A biopsy of the sinus tract might be of value, though frequently the lining consists only of granulation tissue surrounded by polymorphonuclear and round cells. However, if the sinus is tuberculous in origin foreign body giant cells may be observed.

Treatment of such a condition is obviously dependent on the removal of its cause; local treatment of the tract per se is of no consequence. For the surgical management of tuberculous osteomyelitis Steindler's "Orthopedic Operations" (Springfield, Ill., Charles C. Thomas, 1940) can be recommended. If dead tissue or exogenous foreign bodies are observed, healing of the sinus will probably follow the removal of either, the cavity being packed with gauze to promote healing from its depths. If, on the other hand, the tract proves fistulous, communicating with the rectum or anus, treatment should be designed accordingly.

Local therapy, such as the local implantation of the sulfonamides, is of value only as some degree of retardation of bacterial growth is accomplished. The use of the caustics and sclerosing agents affords little hope in the treatment of such a sinus.

MARRIAGE AND DIABETES

To the Editor:—**A woman aged 24 became engaged to a diabetic man aged 28. From the history it seems that the man has had diabetes since 1937. The woman has asked me about the advisability of this marriage. Her fiancé takes 20 units of protamine zinc insulin and eats between 2,000 and 3,000 calories daily. He seems to be fairly well but frequently gets weak spells and does not seem to have an awful lot of pep. He also wears glasses. I enumerated to her some of the possible complications of this illness, such as the predisposition of the offspring to diabetes, possible lowered sexual potency of her fiancé and also to the fact that he will have to take insulin continuously and be careful of his food and mode of living. I told her of his extreme predisposition toward infections and occupational accidents and the reduced longevity. An aunt of the woman also has diabetes. What is the proper attitude to take with regard to advising marriage with young persons with diabetes?**

M.D., Missouri.

ANSWER.—Certainly there is a strong hereditary factor in the development of diabetes mellitus. This has received much discussion in books written on the subject of diabetes such as those by Joslin and Wilder. It is known that diabetes is much more frequent among members of certain races, such as Hindus and Jews: this is due presumably to generations of intermarriage. In probably about 25 per cent of cases in which diabetes mellitus develops a family history of the disease is obtained. The occurrence of diabetes mellitus in twins has been discussed by Pinkus and White. They found that both twins contract diabetes in 70 per cent of sixteen series of similar twins as compared with only 10 per cent of a series of dissimilar twins. It has been proved that diabetes constitutes a recessive character according to the mendelian pattern. This means that if diabetes were to be eliminated by eugenics not only diabetic patients but all relatives of diabetic patients would have to be sterilized or prevented from marrying. Joslin estimated that it would be necessary to sterilize or prevent the marriage of one citizen out of every four in the United States.

Since the woman in question has a family history of diabetes and since her fiancé has the disease now, there is an excellent chance that one or more of their children or their grandchildren would have the disease. Although it is true that the fiancé will have to live a disciplined life as far as diet and insulin are concerned, it cannot be categorically asserted that "he will have a predisposition toward infections, occupational accidents, reduced longevity or low sexual potency." The probabilities are that he will lead an entirely normal life and have a nearly normal life expectancy.

In conclusion, if this man and woman decide to marry anyway, it will be up to them to decide whether they care to perpetuate the disease in their descendants.

References:

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Wilder, Russell M.: Clinical Diabetes Mellitus and Hyperinsulinism, Philadelphia, W. B. Saunders Company, 1940.

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INTRAMUSCULAR THERAPY FOR PREGNANT WOMAN WITH SYPHILIS

To the Editor:—**A patient two months pregnant with a Wassermann reaction of 10+ is unable to receive intravenous therapy because no suitable veins are available. Is intramuscular arsenical therapy equally efficacious? What arsenic preparations would you advise for intramuscular injection? What method of therapy is indicated?**

M.D., New York.

ANSWER.—There are no data as to the relative value of the intravenous versus the intramuscular administration of trivalent arsenicals to pregnant syphilitic women as far as protection of the fetus is concerned. It is highly probable, however, that with adequate intramuscular medication treatment begun at so early a stage of pregnancy as two months will protect the fetus.

Two arsenical drugs may be given by the intramuscular route—sulfarsphenamine and bismarsen. The former is largely used in the treatment of infantile congenital syphilis. It has been almost completely abandoned for adults because of the high incidence of grave reactions. Since certain of the grave reactions associated with arsenical therapy are more common in pregnant women than in nonpregnant women or in men, sulfarsphenamine should be avoided in pregnancy.

Bismarsen, however, may be used. It may be given twice weekly in doses of 0.2 Gm. each, alternate buttocks being employed for injection. The total number of injections in a

course is usually twenty. Since approximately twenty-eight weeks are available for treatment of the patient before delivery, she may be started immediately on a course of twenty intramuscular injections of 0.2 Gm. each of bismarsen, this to be followed immediately by eight weekly intramuscular injections of bismuth subsalicylate in oil, each 0.2 Gm., and this in turn to be followed until delivery with biweekly injections of bismarsen.

The type and the amount of treatment to be given after the termination of the pregnancy cannot be outlined without much more complete knowledge of the mother's situation. If the mother's spinal fluid has not yet been examined, this may be conveniently done while she is in the hospital during the puerperium.

VITAMINS AND DEAFNESS

To the Editor:—**Is Dr. Grant Selfridge's method of treating deafness with nicotinic acid in wide use today? What new developments, if any, have appeared since publication of his early report?**

Henry R. Tatem Jr., M.D., Audubon, N. J.

ANSWER.—Since publication of the article entitled "Nicotinic Acid and the Eighth Nerve: A Preliminary Report" (*Ann. Otol., Rhin. & Laryng.* **48**:39 [March] 1939), Dr. Selfridge has published further articles on related topics (The Eighth Nerve in Relation to Thiamine Chloride and Nicotinic Acid, *ibid.* **48**:419 [June], Eighth Nerve High Tone Deafness From a Nutritional Standpoint, *ibid.* **48**:608 [Sept.] 1939; A Survey of the Relation Between Nutrition and the Ear, *ibid.* **49**:674 [Sept.] 1940). He came to the conclusion that the nicotinic acid in the vitamin B complex was probably of more value than thiamine in eighth nerve types of hearing difficulty. Other authors (Adam, James: Ménière's Syndrome and Avitaminosis, *J. Laryng. & Otol.* **54**:256 [May] 1939. Mellanby, Edward: The Experimental Production of Deafness in Young Animals by Diet, *Laryngoscope* **49**:1090 [Nov.] 1939. Veasey, Clarence A., Jr.: Nature of Vitamin B and Its Components with Special Reference to Nerve Deafness, *Arch. Otolaryng.* **31**:74 [Jan.] 1940) have contributed during the last year or so.

It is difficult to say how widely Dr. Selfridge's method of treatment is used, nor can any one say with a great deal of assurance how much improvement is to be had by treating so-called nerve deafness with vitamin products. Shambaugh, for example (Chronic Progressive Deafness, Including Otosclerosis and Diseases of the Inner Ear, *Arch. Otolaryng.* **33**:436 [March] 1941), says "The strongest argument against the theory that vitamins are important in nerve deafness is the fact that deafness is not a symptom of clinical avitaminosis; neither scurvy, beriberi nor pellagra has been shown to be associated with nerve deafness. If marked clinical avitaminosis does not injure the eighth nerve, it is difficult to believe that mild subclinical avitaminosis would be a cause of nerve deafness. While not convinced that vitamins are a factor in nerve deafness, I have attempted to maintain an open mind and have employed them in numerous cases of nerve deafness, with uniformly negative results to date."

Others besides Shambaugh are equally skeptical. On the other hand, it is clear that when a new remedy is advocated for a hitherto incurable disease it should within the limits of safety receive the widest trial possible with sufficient time, of course, allowed to pass before rendering final judgment.

BLOOD UREA DETERMINATION

To the Editor:—**I have used the so-called Myers method of determining blood urea, in which the blood protein is precipitated with trichloroacetic acid and the filtrate titrated with mercury bichloride. The end point is determined by adding a drop of the mixture of a saturated solution of sodium carbonate to obtain a brown precipitate (mercuric carbonate?). The calculation of the result involves subtracting a factor which must be determined for each new batch of reagents by performing a few tests on supposedly normal blood. I should like to put this test on a rational basis, both chemically and mathematically. Please tell me of the reaction involved, as well as the solubility products and ionization constants of the compounds involved. I am familiar with theoretical chemistry and the principles of inorganic quantitative analysis.**

E. K. Doak, M.D., Taylor, Texas.

ANSWER.—The method the inquirer has been using for the determination of blood urea is apparently the one described by P. S. Hench and Martha Aldrich (Urea Retention, *Arch. Int. Med.* **38**:474 [Oct.] 1926). The same authors (The Concentration of Urea in Saliva, THE JOURNAL, Oct. 21, 1922, p. 1409) earlier employed this method to estimate the urea in saliva. This method is an adaptation of the method originally described by von Liebig (*Ann. d. Chem.* **85**:289, 853) and used in modified form by Pflüger (*Arch. f. d. ges. Physiol.* **21**:248, 1880).

It is obvious that the mercury bichloride solution used in titrating the filtrate obtained after precipitating the blood proteins with trichloroacetic acid will combine chemically with various nitrogenous substances present in this filtrate. Hench and Aldrich were able to show that there was a direct parallelism between the so-called mercury combining power of the blood and the level of the blood urea determined by the urease method. They further noted that, if 60 was deducted from the number of cubic centimeters of 5 per cent mercury bichloride required to titrate the equivalent of 100 cc. of blood, it would give approximately the number of milligrams of urea in 100 cc. of blood.

While the "mercury combining power of the blood" probably does roughly parallel the urea and nonprotein nitrogen of the blood, as Hench and Aldrich have shown, it is chemically unsound to try to calculate the blood urea with the aid of an empirical factor which at best is only an approximation. The creatinine, creatine, uric acid and amino acids in the filtrate are not constant and would vary as well as the urea, and all would combine with the mercury bichloride. This mercury combining power of the trichloroacetic acid blood filtrate apparently serves as a reasonably good index of the degree of nitrogen retention but cannot be considered a reliable procedure of determining urea. For the determination of urea, the urease method in some form should be used.

VISUALIZATION OF INTRAHEPATIC LESIONS WITH THORIUM DIOXIDE

To the Editor:—**A patient has a pain in the right upper quadrant with a healed peptic ulcer, and I suspect an intrahepatic cyst or abscess. The roentgen ray man is rather dubious about trying thorotrast. What is the present status of liver visualization with thorium? This patient has been driven to drugs with pain, and I hesitate to explore a liver without some positive indication.**

A. L. Lieberman, M.D., Gary, Ind.

ANSWER.—It is usually possible to visualize an intrahepatic cyst or abscess by the use of a preparation of thorium dioxide. Twenty-five cc. of the solution should be injected slowly by the intravenous route on three successive days, and roentgenograms made of the liver and spleen twenty-four hours after the last injection. The Bucky diaphragm should be used and roentgenograms taken in the anteroposterior and oblique positions. Cysts or abscesses appear as "filling defects"; they have a more symmetrical appearance and sharper margins than metastatic tumors, which also appear as defects in the homogeneous shadow of the liver (Yater, W. M. and Otell, L. S.: Hepatosplenography with Thorium Dioxide Sol, THE JOURNAL, Aug. 12, 1933, p. 507).

After injection thorium dioxide remains permanently in the liver. Since it is a radioactive substance and since it may be converted into the even more radioactive substances mesothorium and radiothorium, there is probably some danger connected with its use. Most investigators advise that the material be employed only in cases in which there is some serious reason for using it or in those in which early death may reasonably be expected. In the case in question, it would seem justifiable to employ this method of visualizing an intrahepatic lesion.

RECURRENT PNEUMOCOCCIC MENINGITIS

To the Editor:—**Is there any treatment or procedure for recurrent pneumococcic meningitis? I have a patient who has had it three times with intervals of four or five months between the recurrences. Sulfapyridine is effective during the recrudescences but it cannot be used continuously.**

E. W. Westland, M.D., Oak Park, Ill.

ANSWER.—Recurrent pneumococcic meningitis is one of the best examples of the result of focal infection in the strict sense of the term. It is most likely that there exists a constant source of supply of pneumococci which at times become invasive and penetrate the closed cerebrospinal system when conditions permit. Just what these conditions are is unknown, but they are designated generally as either diminished local resistance, diminished general resistance or both. Since pneumococci, particularly those of type III and other higher numbered types, are commonly carried in the nose and throat of even healthy persons, these are the chief sources. This being the case, it should first be determined what type of pneumococcus is the cause in the case mentioned and whether the recurrent attacks are each caused by pneumococci of the same type. Then a search should be made by an otolaryngologist for a possible localized area of chronic infection in certain special areas such as the paranasal sinuses or the mastoid cells. Localized infection, if definitely found, should be treated with appropriate conservative measures. In some cases there seems to be no single or definite source; pneumococci reside as saprophytes over a diffuse area, in which case no operative treatment is necessary.

It is also possible that the patient is not a carrier but contracts repeated infections from contact with a person who is a carrier, perhaps another member of the family. In this case, cultures of the nose and throat should be made of all immediate contacts to determine the source of infection and appropriate isolation established if necessary.

At present successful means of treatment have not been devised to rid carriers of pneumococci. Solutions of certain sulfonamide derivatives may be sprayed into the nose and throat as an experimental method, but it is impossible to reach all areas or to penetrate the deep crypts of the mucous membrane where bacteria reside. Type specific vaccine would seem to be indicated to build up specific resistance, but if the spontaneous recurrent attacks of infection fail to do it, as seems to have been the case, it is hard to see how vaccine can do any better. Improvement in the patient's general physical condition with diet, exercise, rest and perhaps a change to an equable climate is recommended.

TIRED EYES WITH SWOLLEN LIDS

To the Editor:—A white woman aged 50, unmarried, occupied as a copy-reader, has experienced aching of the eyes several times a day for over a year. She "feels as though there is no room in the socket for the eyes." This is relieved by cold compresses. Most annoying is the fact that on awakening every morning, without fail, the eyelids and adjacent parts of the face and forehead are notably swollen, so that it is only with difficulty that the lids can be opened; when the eyes have been washed with boric acid solution or plain warm water the swelling subsides and does not recur all day. There is a small amount of yellowish exudate in the inner canthus in the morning before the eyes are washed. Sometimes this swelling awakens her at night. A Gram stain on the exudate showed a few gram-positive diplococci and a few short chain streptococci. She has seen several ophthalmologists, who declared that they saw no pathologic condition. Roentgenograms of the sinuses show polypoid changes in the antrums. There is a morning hacking cough until a few blobs of sputum can be expectorated. Nose and throat examinations were not remarkable. A mild hypochromic anemia existed and has been corrected. Wassermann and Hinton tests were negative. The urine on several occasions showed no abnormality. The blood pressure was repeatedly 120-140 systolic and 80-90 diastolic. The scleras are clear and the conjunctivas are but slightly injected. During the day the eyes appear to be perfectly normal. The basal metabolism is + 12. She must use three different pairs of glasses for proper vision, depending on the use to which she is putting her eyes. Can you suggest a cause or a line of investigation to determine the cause, and the treatment? A drop of mercurochrome in each eye nightly has given slight relief and that is the best she has been able to get since the onset.

M.D., Massachusetts.

ANSWER.—It is difficult to evaluate the importance of the signs in this case. Many of the symptoms resemble those of the common asthenopia in which use of the eyes is difficult even when all refractive error is properly corrected. There is a definite psychic element in such cases, but help may be afforded by certain exercises and by the use of prisms to correct all muscle imbalance for close work. There seems to be some chronic conjunctival irritation, although the signs of it are slight. If positive cultures of streptococci or pneumococci are obtained, this infection may be cleared up by proper antiseptics, but slight congestion and secretion should not cause such extreme symptoms. The swellings of the lids should be seen by the physician to be considered of importance. Swelling which disappears before the doctor can see it is not likely to indicate any serious condition.

POSSIBLE ETHYLENE GLYCOL POISONING

To the Editor:—A man aged 31, a worker in a powder factory, has been exposed to a substance known as ethylene glycol for the past three years. He had been well until a few months ago, except for influenza in 1918 and an automobile accident four years ago in which several ribs and the right clavicle were fractured and the head injured. Three months ago he began to experience shortness of breath on effort and a burning feeling in the epigastrium. At one time he had a severe attack which caused him to break out in a cold sweat. Examination by two cardiologists and myself revealed a healthy looking man. Blood pressure was 130 systolic and 90 diastolic and the pulse was irregular. The first sound at the apex was reduplicated, the second sound at the base slightly accentuated. There were no murmurs. The orthodiagram was normal. The electrocardiogram showed auricular flutter. There are no signs of rheumatic or thyroid heart disease. Small doses of digitalis caused his heart to revert to normal rhythm. I shall appreciate any information you may give me concerning this case.

M.D., Pennsylvania.

ANSWER.—No opinion can be formed from the query as to the extent of exposure to ethylene glycol. Exposure to concentrations higher than 25 parts per million has been associated with injury. Assuming actual exposure, the symptoms mentioned are compatible with a diagnosis of ethylene glycol poisoning, but the outstanding features of such poisonings are not mentioned, namely mental disturbance and injury to the blood cells. A definite anemia does not always arise, but leukopenia is fairly constant. In the typical case, several or all of the following features may arise: excessive fatigability, drowsiness, shortness of breath, visual blurring, conjunctival and respiratory tract irritation, nausea and vomiting, headache, nocturia, muscle hypertonicity, disorientation, anemia, leukopenia and many young blood cell forms.

In the present instance the suggestive evidence is sufficient to warrant the prompt removal of the patient and others similarly involved from the exposure environment pending further medical and environmental examination. Poisoning from this agent is discussed in detail in the following publications:

Donley, D. E.: Toxic Encephalopathy and Volatile Solvents in Industry. Report of a Case, *J. Indust. Hyg. & Toxicol.* **18:** 571 (Oct.) 1936.

Parsons, C. E., and Parsons, Malvina E. M.: Toxic Encephalopathy and "Granulopenic Anemia" Due to Volatile Solvents in Industry. Report of Two Cases, *ibid.* **20:** 124 (Feb.) 1938.

Greenburg, Leonard; Mayers, May R.; Goldwater, L. J., and Burke, W. J.: Health Hazards in the Manufacture of "Fused Collars": I. Exposure to Ethylene Glycol Monomethyl Ether, *ibid.* **20:** 148 (Feb.) 1938.

Wiley, F. H.; Hueper, W. C.; Bergen, D. S., and Blood, F. R.: The Formation of Oxalic Acid from Ethylene Glycol and Related Solvents, *ibid.* **20:** 269 (April) 1938.

Laug, E. P.; Calvery, H. O.; Morris, H. J., and Woodard, G.: The Toxicology of Some Glycols and Derivatives, *ibid.* **21:** 173 (May) 1939.

VARICOSE VEINS ABOVE THE KNEE

To the Editor:—A patient said that a doctor told her that it is dangerous to inject varicose veins above the knee. Is this true?

M.D., Massachusetts.

ANSWER.—When injections of sclerosing solutions are made into varicosities above the knee, an ascending thrombosis may occur up to the saphenofemoral junction. While such a thrombus only infrequently extends into the femoral vein and thus becomes a source of pulmonary embolism, this is a distinct possibility. The injection of veins above the knee, however, is not so much dangerous as it is futile. It only infrequently results in permanent obliteration, as the back pressure of blood from above canalizes the thrombus; but even if the main saphenous trunk should remain closed, the tributaries entering the saphenous vein close to its junction with the femoral will enlarge and produce a recurrence. For these reasons a high division of the main trunk and its tributaries should always precede the injection treatment of varicose veins whether they are above or below the knee. The permanent results of this combined treatment are satisfactory.

ROUGE FOR BUFFING AND PULMONARY TUBERCULOSIS

To the Editor:—A young man presenting symptoms of tuberculosis but no auscultatory signs has an infiltration of the left upper chest as revealed by a roentgenogram. A recheck showed an increase in this infiltration after three weeks. This man works with two materials which generate a fine dust. The composition of these materials is not known. One material, was slate colored and hard, is purchased from the Hanson, Van Winkle Munning Company, Chicago, and the other is purchased from the Buckeye Products Company, Vine Street, Cincinnati. The latter product is brick red and brittle. Both products are called rouge for buffing. What is the composition of these materials and are they responsible for the infiltration of the lung? Could they aggravate an existing inflammation of the lung?

James R. Bone, M.D., Cincinnati.

ANSWER.—Rouge used for buffing is ordinarily composed of iron oxide, and this material, unless contaminated by a high percentage of free silica, does not produce serious pulmonary reaction. Without knowledge of the composition of the particular materials it is impossible to prognosticate its effects on the lungs of an exposed workman. The fact that the roentgenogram shows a localized infiltration of the upper portion of one pulmonic field is more suggestive of an infectious than a silicotic process. It is possible that if the mineral should prove to contain significant quantities of free silica the roentgenogram might indicate a combination of silicotic and tuberculous changes.

SWELLING OF DORSUM OF HAND

To the Editor:—About a year ago a patient struck his right hand against a desk and has had persistent swelling of the dorsum of the hand over the second metacarpal bone. Roentgenograms have been negative for fracture, dislocation or bony pathologic changes. With the fingers extended the swelling is about the size of a walnut and, with the fingers flexed, the size of a small lemon. It is firm to palpation and somewhat painful, and seems to be connected with the bone. What would be the most probable diagnosis?

M.D., Louisiana.

ANSWER.—1. Simple ganglion.
2. Tuberculous tenosynovitis.